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Child Feeding in Europe Under the International Children's Emergency Fund*

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As we are meeting here, the people of the United States are being asked to do two things to combat hunger and misery in Europe during the months just ahead. Our government is appealing to us to eat less of certain foods in order that greater supplies of them may be shipped abroad to people who need them more than we do. A citizens' group, the American Overseas Aid, that is serving as a fund-raising organization combining the United Nations Appeal for Children with the campaign of private American agencies conducting relief programs in Europe and the Far East, will soon be asking us to contribute generously as individuals to supplement the appropriation made by the last Congress to the International Children's Emergency Fund. We public health workers must be ready to explain honestly and convincingly to our fellow Americans why we are being asked to eat different kinds of meals from those to which we are accustomed, to waste less, and to forego some of our everyday luxuries in order to give money for the purchase of foods, clothing, medical supplies, and equipment for children in countries still suffering from the war.

I welcome this opportunity to review with you briefly the situation that has led to the creation of the International Children's Emergency Fund. It has been a great privilege to be a member of the United Nations' staff and to assist in the organization of this Children's Fund. I am grateful to the U. S. Children's Bureau for releasing me last April for four months to survey the health and welfare needs of children in many of the war-torn countries. I wish hundreds of our fellow citizens here in the United States could see as I have the tragic results of the war and its effect on the health and growth of children and youth, on infant mortality and the incidence of tuberculosis, and on their

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present opportunities for education and earning a good livelihood. I am glad to bring you last minute news of current activities and plans of the Children's Fund for the immediate future, because I am convinced that you both individually and as members of this Association can help substantially in making these plans become a reality.

I cannot dwell at any length on what has happened to the health of children in the warring countries of Europe between 1939 and the present. I can say, however, that nearly all these countries tried to protect their children. Recognition that growing children and pregnant and lactating women are nutritionally vulnerable led to their being given the first claim—all too often the only claim—on certain highly nutritious but especially scarce foods. School meals and other group feeding schemes undertaken by both governments and voluntary organizations made the home ration go farther. In Great Britain, these measures met with such a high degree of success that, according to no less a national health authority than Sir Wilson Jameson, the average level of child health actually rose during the war period. In most of the invaded countries, however, the children suffered severely from lack of food. Such food as could still be produced could not be distributed evenly because of the disruption of transportation. Hordes of people, including children, spent much of the war period moving from one place to another without access to enough food for anyone. Even among those relatively fortunate children who were not separated from their homes or their families as a direct consequence of the conflict, the food situation was deplorable.

Deprivation and near starvation are largely responsible for certain health conditions that prevailed during the war and still exist over wide areas. Infant mortality rates shot up during and immediately after the war to heights unprecedented in recent years; the incidence of premature births and stillbirths soared as well. Death rates among children who managed to survive the first year were several times pre-war levels. Adult types of pulmonary tuberculosis have shown an alarming incidence among children of school age in all of the war-torn countries; tuberculosis of bone and joints has increased many times; miliary tuberculosis and tuberculous meningitis in children are now common. In every children's hospital I visited I saw ward after ward of the victims of tuberculosis. In one small country, not atypical of others, I learned that to take care of the known cases of bone tuberculosis alone among children 7,000 new hospital or sanatorium beds were needed. They had only 500 when I was there.

As was to be expected, severe rickets once more became common in some countries, but there have been relatively few reports of other nutritional deficiency diseases. Those hardier youngsters who have somehow escaped any evidence of an actual deficiency disease tend to be well below average weight and height for their years, as measured by pre-war standards. Some pediatricians give to this marked slowing down in growth the credit for the lack of widespread nutritional deficiency diseases.

Liberation brought a measure of relief to certain areas, first under the military governments and subsequently under UNRRA. With the end of the war a few countries that had suffered severely made an extraordinarily rapid recovery. Norway, for example, has not only been able to rehabilitate its own children unaided but expects to be able to help other countries. Most countries continue to require help. At least 10 of the countries that were the victims of aggression are still in dire need of outside assistance to restore the health and growth of their children, one of the most urgent measures in their general

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rehabilitation. These include the nations of central, eastern, and southwestern Europe which UNRRA selected for inclusion in its program, and two others that did not receive this aid but whose children now are in the greatest need.

During the years UNRRA was in existence, it did much to alleviate hunger among children through its programs in coöperation with the respective governments. Everywhere I went in the UNRRA-aided countries, I saw hundreds of children in schools or institutions being fed with UNRRA foods, clothed in UNRRA garments, sleeping in UNRRA beds and under UNRRA bedding. However, great as UNRRA's resources were, it had to limit its efforts to supplementary feeding programs which reached only a part of the child population. Moreover, by the summer of 1946 it had become clear that UNRRA would cease operation in 1947 before the job of rehabilitation was finished.

Small wonder then that the 40 countries who sent delegates to the Fifth Session of the Council of the United Nations Relief and Rehabilitation Administration in Geneva in August, 1946, agreed that the needs of children could not be allowed to remain unmet when UNRRA should be terminated. It was unanimously recommended to the United Nations that an International Children's Emergency Fund be established. Accompanying this request was a promise to transfer to the new agency any residual assets that might be available from UNRRA. On December 11, 1946, the General Assembly of the United Nations unanimously passed a resolution establishing the International Children's Emergency Fund as an agency of the United Nations to report to the Economic and Social Council and to the Assembly. An Executive Board, composed of representatives from 26 nations, was nominated for a period of 3 years. The Chairman of the Board is Dr. Ludwik Rajchman, of Poland, formerly Director of the Health Organization of the League of Nations. An Executive Director and administrative staff carry the responsibility for operating the program under policies established by the Board.

The principles under which the Fund operates and the scope of its activities have been set forth by the General Assembly and the Economic and Social Council of the United Nations with the advice of the Social Commission. Here are some of the high lights. The Fund is to be administered for the benefit of children and adolescents in countries which were victims of aggression or which had received aid from UNRRA. Furthermore, the Assembly directed that the Fund should be utilized also for "child health generally," giving priority to countries that were the victims of aggression.

Distribution will be on the basis of need, without discrimination because of race, creed, nationality status, or political belief. The governments of the aided countries must carry the responsibility for programs for distribution of supplies, but they may coöperate with and utilize the resources of voluntary agencies. Within the broad scope of operations of the Fund, priorities shall be given to three main activities. These are: (1) supplementing the essential food and other supplies needed to alleviate malnutrition and disease in children and to safeguard the health of expectant and nursing mothers; (2) encouraging the reëstablishment of children's institutions and services destroyed by war; and (3) enlisting coöperation of the United Nations and the World Health Organization in providing fellowships for training of health and welfare personnel for work with children.

The Fund estimated in January, 1947, that 20,000,000 European children were in need of supplementary food. To provide a meal of some 700 calories would

cost about 6 cents a day at the price level prevailing at the time the calculations were made. On a yearly basis, the total cost per child would be approximately $20 at this rate. Of that total, governments could provide a part which would vary widely from country to country but might be expected to average one-half.

The Fund would try to make up the deficit between what the countries could furnish and the total cost of the meal. That is, in the course of a year the Fund would need to make available $200,000,000 in the form of foodstuffs from the countries with enough to spare. And that is not all. Clothing, especially footwear, and medical supplies were hardly less urgently needed than food itself. The Fund foresaw the need of another $50,000,000 for that purpose.

Where is the money or the food coming from? I am sure that question must be uppermost in your minds. There are three main sources. So far UNRRA has turned over some supplies and $5,650,000 to ICEF and has made advances to permit setting up a skeleton staff. For full operation, the Fund is dependent on contributions from governments on the one hand, and from voluntary contributions of agencies and individuals on the other. Some governments have already committed themselves.

As part of the Foreign Relief Bill, signed by the President of the United States on May 31, 1947, Congress authorized and subsequently appropriated a contribution not to exceed a total of $40,000,000, or 57 per cent of the aggregate contributions. An initial contribution of $15,000,000 was authorized, but no additional funds can be allocated until this is matched under the 57–43 formula. To receive the total $40,000,000 authorized, the Fund must receive from other donor governments approximately $30,000,000. France has agreed to contribute in French francs 6 per cent of the amount contributed by the United States and has made available $900,000 in francs. Canada has already contributed $5,000,000 to be given in the form of foods and shipping. The Dominican Republic has assured $20,000. Norway has made an initial contribution of $62,000 worth of cod liver oil. Last week, the Australian Government announced a contribution of 800,000 Australian pounds (about $3,220,000). Other countries, such as Czechoslovakia, Denmark, Holland, New Zealand, Sweden, Switzerland, and Uruguay, are expected to make contributions though the amounts and form of contributions are not yet known. Some are planning to make their gifts in the form of training facilities, others in clothing or materials for shoes, others in medical supplies.

Substantial as these governmental contributions are, they only add up at the present time to something less than 30 million dollars, an amount far from that estimated last winter as necessary. Nothing that has happened in Europe since last spring leads us to believe that the resources of the recipient countries were underestimated. In fact, my own observations in Europe and recent reports lead us to believe that the winter ahead will be the hardest one yet. Voluntary contributions are tremendously important. In this country there will be a drive under the auspices of American Overseas Aid which will include, with other foreign relief agencies, the campaign of the United Nations Appeal for Children. In other countries the International Children's Emergency Fund will also benefit from the United Nations Appeal for Children.

With some funds already at hand and the prospect of more to come, the Fund is now operating on a small scale and laying the foundations for an all-out program when adequate funds are at hand. It has a Director, Maurice Pate of the United States, and a small inter-

national staff, most of whom have had wide experience in child welfare operations.

The field technical staff will operate from the Fund's office in Paris and will be headed by a pediatrician, Dr. Henry F. Helmholz, Pediatric Department of the Mayo Clinic. One additional pediatrician, a member of the staff of the health department of Sweden, has been employed so far and is now assigned to Roumania, and a second pediatrician, a Belgian, is to be assigned from the World Health Organization to the Fund in the very near future. It is anticipated that the staff will include also specialists in the following fields: nutrition and group feeding, social services for children, and public health nursing. These workers will help governments, on request, to formulate plans for health and welfare services to children, including child feeding programs, and to arrange for the training of professional personnel. Coöperation with the World Health Organization, Food and Agriculture Organization, and other United Nations international organizations in developing appropriate training facilities is already being worked out; a committee of experts appointed jointly by ICEF and WHO will give advice on training in the health field. Consideration is now being given to an offer of the French Government to establish, with part of its contribution in francs, an international children's center to aid the Fund in providing training facilities and opportunities for joint study of health and welfare problems that are of concern to the Children's Fund.

The government of each country entitled to aid will develop its own proposals within the framework of the Fund's policies. Once a national plan has been approved by the Executive Board, the government in question will operate its own program. That means it will decide how it will use the supplementary food supplies obtainable from the Fund to extend its own child feeding programs. The country's plan will show the order of priority in selecting groups of children for aid. All these decisions will be made within the general policies laid down by the Executive Board of the Fund. These specify, for example, that with the exception of milk for infants under 2 years of age and pregnant and nursing mothers, foodstuffs will be distributed only for group feeding through such centers as milk stations, school meals, day nurseries, and homes for war orphans. The Fund will provide a very small mission in each assisted country. The mission will be responsible for supplies, act as liaison with the government, observe the operation of programs to which the Fund has contributed, and give aid to the country in obtaining the help of experts or the advisory service of the Fund's technical staff.

Those of us who serve as consultants to the Fund cannot rely on our judgment alone for our recommendations. Clearly we need firsthand information gained in the field by ourselves and our colleagues in other United Nations organizations. During the 4 months that I was on leave from the Children's Bureau to serve as Chief Medical Consultant to the Fund, I made two trips to Europe. I visited the 10 countries that had indicated their intent to seek aid from the Fund.

The primary purpose of these visits was to ascertain the health and welfare needs among children and to receive the views of governments with respect to the kinds of aid that each country deemed most urgent. Another purpose was to discuss with government officials the scope of the International Children's Emergency Fund program and to give preliminary technical help that might simplify the eventual preparation of a plan to accompany the formal request for aid. Whenever possible I conferred with representatives of UNRRA, FAO,

and WHO because the complete understanding and coöperation of these allied international organizations is so essential to the efficient operation of the Fund's program.

I wish that my words to you could animate statistics as they were made to live for us by our visits to schools, milk stations, maternity clinics, day nurseries, and homes for war orphans or mothers and infants. During the 11 weeks I was in Europe, we visited literally dozens of institutions for children, including schools, orphanages, day nurseries, nursery schools, child health clinics, dispensaries, hospitals, sanatoria, school feeding centers—and I saw hundreds of children from whom I could draw my conclusions as to their present condition. Thanks to the great help given by UNRRA and voluntary organizations, children in these institutions were not starving. Though large proportions of those seen were thin and stunted in growth and terribly in need of still more food and clothing, it was only in Roumania that I saw children who showed the results of real starvation. The Roumanian province of Moldavia suffered last winter from a famine that affected between 300,000 and 400,000 children. I visited a home for Moldavian children that was housed in the former Rockefeller Institute of Hygiene in Budapest. Most of the children I saw had been in the institution only a short time. Some were so weak from lack of food that they remained absolutely motionless as we examined them. A few had been under care long enough to show what enough food could do for them. For example, a 5 year old boy who had been admitted in a starving condition 3 months earlier had gained 9 kilograms.

Among the informed officials of the countries that we visited, there was complete agreement that priority in the expenditure of funds should be given at this time to food. Of all the foods needed to round out the meager ration locally available, milk came first. Next came proteins, fats, and vitamins, especially cod liver oil. That was how the countries themselves felt about it. But it could be that the harassed governmental officials and professional health workers were too close to the situation to have the proper perspective.

We asked ourselves: How would a group of technical experts react if they were to consider the matter at a distance? The occasion of the International Pediatrics Congress in this country in July gave us a chance to find out. At the request of the Children's Fund, FAO and WHO joined forces to bring to Washington a small but representative group of pediatricians and other specialists in nutrition to serve as an advisory committee on child nutrition. The countries represented were The Netherlands, China, Greece, Italy, Poland, Hungary, Cuba, France, Great Britain, Czechoslovakia, Norway, Canada, and the United States. At the end of a 4 day session, the committee submitted a report consisting of a review of the general condition of children in the war-stricken countries, a statement of principles of child nutrition, and a set of recommendations to the Fund. This document promises to be of the greatest possible value to both the policy making and the technical staff of the Fund. Its recommendations as to the relative importance of various foods for supplementary feeding tend to reinforce those made to me on the spot in Europe, and to furnish the scientific backing for the priorities suggested by the administrators.

This Committee on Child Nutrition did not stop with its technical recommendations. It made a concluding statement that in my opinion might be useful during the next few weeks and months when you and I will be asked why Americans should go to the inconvenience of changing our food habits again or why we should give of our

abundance to an International Children's Emergency Fund when there are also children in the United States who do not have enough to eat? I should like to use what time I have left to read you what the Committee on Child Nutrition said. It is not so very long.

"This committee, composed of doctors and nutrition experts with experience in the problems of child nutrition and knowledge of the great needs of children and mothers in many parts of the world, at the present time, strongly supports the aims of the United Nations International Children's Emergency Fund. Children in many lands are suffering from the effects of prolonged undernutrition and malnutrition and from lack of other necessities of life. They need more and better food for satisfactory mental and physical development. Expectant and nursing mothers must be well fed and well cared for, if they are to bear and nourish healthy children.

"There can be no more important objective than the salvaging of damaged child life and the building of strong and healthy men and women who can play a full part in the reconstruction of a devastated world. The world cannot hope for a better future unless it looks after its children. Much can be achieved by the careful and well organized expenditure of money and effort on the feeding and care of necessitous mothers and children. International action to promote the well-being of mothers and children will, moreover, foster a spirit of friendship and coöperation between nations."

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Prospects of Improving the Food Supply of the Orient*

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MY sole qualifications for undertaking the role of a prophet in such a formidable field are a long standing acquaintance with Oriental food problems growing out of past residence in India and the Philippines, supplemented by a four months tour in Central China and the Philippines in 1946. I shall not burden you with statistics but will endeavor to convey to you the vivid and contrasting impressions about food and related matters which I gained during successive visits to the Orient during more than 50 years.

The Orient of today is not at all the Orient which preceded Japan's dream of pan-Asiatic conquest. Its principal port cities, apart from those of India, are wrecks of a former prosperity, its economic structure is shattered, its people and its modes of life are demoralized. Millions of Asiatic people who had little or no knowledge of world politics, who felt that the war was no concern of theirs, found themselves enveloped in a conflagration which destroyed their homes and drove them to vain refuge in the hills or jungles where their families were scattered and decimated. The survivors have since returned to find their houses gone or at least looted and in disrepair, their work animals slaughtered, their implements lost. For years to come it must be the lot of many Asiatics to be content to pick up the pieces, replace the simple properties they used to have and in the meantime keep body and soul together by farming under unprecedented handicaps, by employment at whatever wages may be offered or literally to live by their wits.

It is no brave "new world" in Asia any more than it is in devastated Europe though such hopes ran high as Japan's defeat developed. When we speak then of "improving the food supply of the Orient" we must think of two successive stages: first, that of a substantial restoration of an all-too-scant former competence, and second, of an advance to new and higher standards of living. In areas of worse destruction the first stage may well require a decade or two; in others, more lightly touched by the flame of war, perhaps orderly production and subsistence may return in 5 or 10 years. Prediction is extremely difficult especially where continuing civil strife, inflation, and destruction of trade channels prevail. Stable government and some trustworthy medium of exchange are almost essential for the restoration of any area.

Yet new leavens are at work in the Orient which may bring profound changes within a short span of years if they can be kept alive and functioning. The urge to political and economic independence is strong and widely felt. Unfortunately it often takes the form of resentment at past

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imperialism, a system which was far more benevolent and constructive for the Oriental than he recognizes in the heat of the present moment. Nevertheless, the new demand for independence embodies a new and constructive self respect.

Akin to this spirit of independence is the yearning for greater social justice, for elimination of the vast contrasts between wealth and poverty which have existed even since pre-imperialist times. It expresses itself conspicuously in strikes, a most unhappy and unfortunate phenomenon in the presence of the acute need for economic reconstruction. There have been strikes, frequent and often prolonged, in every port city so that partly for this reason and partly because of destruction of facilities, shipping accumulated to the capacity of the ports while awaiting unloading. Vast amounts of goods of both commercial and UNRRA origin were held in ports for weeks or months, while ashore merchants and the general population suffered in desperate need of them.

In Shanghai prohibitive costs of trans-city transportation and the looting of goods en route almost paralyzed commerce. The ascending spiral of inflation robbed money wages of meaning and drove interest rates to 15 per cent a month or more. The monthly paid white-collar clerk even of college grade often received lower wages than the daily waged coolie whose rate of pay was adjusted more promptly to meet inflation. Rice, the staple food, sold in mid-1946 for $70,000 Chinese currency per picul (56 kilos), equivalent to nearly 30 cents a pound United States currency compared with 2 or 3 cents prior to the Japanese occupation of Shanghai. In such a topsy turvy world in which the wage earner—whether coolie or accountant—counted his wages in sums ranging from $100,000 to $200,000 per month but had a purchasing power unequal to the necessities of life, the demanding attitude of every segment of society was quite understandable. Yet it seemed well nigh criminal that 400,000 bushels of threshed and harvested rice should have lain unused in Szechuan Province while just below the Yangtze gorges 10 to 15 million people subsisted, when they did not starve altogether, on an average of 1,000 calories of grain, pieced out with roots and grass. A great part of the answer lay, so I was reliably informed, in the exhorbitant fees charged by the unionized Yangtze river pilots for taking boats through the dangerous waters.

Thus China and, in some degree, all the Orient suffers from the ill-considered adoption of a motley assortment of western modes and customs. Very prominent among them at the moment are trade unionism and anti-imperialist feeling. It is perhaps eloquent of the limited but genuine virtues of British colonial policy that Hong Kong has made a better business recovery than any other city formerly occupied by the Japanese. Recent reports indicate no striking general improvement since 1946 except some betterment in production and distribution of rice and other staple foods. Inflation is 10 or 20 times worse in China and it is difficult to imagine that urban industrial activity has grown more orderly and adequate.

A vast amount of earnest and self-sacrificing effort is being expended by educated Chinese in an effort to redeem the situation. One cannot doubt the integrity of the great majority, yet much of their effort seemed misplaced or ineffective. Great reliance on governmental action was general. Often, grandiose schemes of social control and betterment seemed to preoccupy the minds of Western-trained government people. Some panacea such as an elaborate scheme for collecting vital

statistics, for distributing free drugs, or for organizing maternity clinics was keenly discussed while the roof still leaked, sewers backed up in the streets, or a shaky stair rail went unmended.

Yet perhaps more than anything else, what impressed me in the Orient in 1946 was the general avidity for adoption of all things Western. Whereas, a generation ago to speak of anything as foreign was to condemn it, there can be no higher commendation now in the eyes of even the most lowly. Education is everywhere eagerly sought, with special emphasis on Western science. Machine methods of manufacture are eagerly desired. So are Western gadgets for home use: radios, refrigerators, electric heaters, and what not. The moving picture, presented entirely in English, vies with dance halls in the Western manner for popular entertainment. Music is Western, both classical and modern, and in general excellent. Perhaps especially in medicine and in pharmaceutical products, the Occidental has completely displaced the Oriental in popular favor. No drug is trusted as truly modern unless it is injected with a hypodermic needle. Dressed in the guise of modernity any nostrum is worthy of sublimest faith.

Obviously, Oriental peoples for whom Western ways are yet unfamiliar need to develop a discriminating sense of values which will lead them to adopt only what is adapted to the local situation. Pending the development of such a sense, there is a great merit in the more conservative viewpoint of the rural population. This was illustrated in 1946 by the relatively rapid restoration of farming in China compared with manufacture. While it was not yet possible at that time to manufacture the simplest articles such as paper, soap, or cigarettes, in competition with imported articles, all the farm land visible en route from Shanghai to Nanking was under intensive and apparently good cultivation. The methods were ancient, primitive, and no doubt back-breaking, but the crops were prospering and needed goods were being produced while the population of the cities subsisted by doing one another's washing, turning the wheels of the government, and exchanging goods largely of foreign origin. For all the Orient, agricultural recovery must come first and it will do so by exercise of the ancient habits of industry and the use of primitive tools. Yet, for the longer term, Oriental avidity for new ways cannot fail to score heavily in future development if chaos can be averted. Were it not for the present dire want and disorganization, one could easily imagine within the next generation or two an Asiatic renaissance quite comparable to that of Europe 500 years ago. It may yet occur.

One of the more useful pieces of social machinery adopted from the West is government-financed commercial operations in staple foods. The China Food Industries Corporation buys rice and wheat, owns and operates flour and rice mills, as well as vegetable oil plants. Its prime purpose is to offer foodstuffs in the open market in competition with private industry and especially at times and places where speculators may drive prices to prohibitive levels. In the Philippines the National Rice and Corn Company performs a similar function though under a somewhat more restricted charter. "NARIC" is required to sell at cost, makes no profits, and its working capital is replenished by annual government appropriations. Its Chinese counterpart is permitted to speculate in foodstuffs and use its profits either to subsidize below-cost sales in needy areas or to expand its operations. I had numerous contacts with both concerns and formed a favorable opinion of their competence and usefulness. Neither aims to force private enterprise out of the staple food industries but

rather to curb speculation and abuse by competitive operation. In the Philippines, where a third of the rice consumption during 1946 had to be imported, NARIC's operations were very large; those in China were much smaller in relation to population though even larger on an absolute basis.

The main purpose of my tour was to weigh the possibilities of early steps to improve the nutritional quality of rice, particularly with reference to the eradication of beriberi. Accordingly I examined the rice industry with some care. Rice is the staple food of China throughout the Yangtze valley and of areas to the south of it. North of it the staple grain is wheat. Sorghums and soy beans supplement both these grains, more so in the north than in the south. Rice is cultivated extensively throughout the area where it constitutes the staple but there are areas of surplus and of deficit. The central provinces of Hunan and Hupeh normally produce large surpluses but were centers of starvation in 1946 because of the recency of destructive warfare there. The cities draw on the surrounding country often from the far interior. Shanghai's rice comes largely down the Yangtze valley and partly from abroad in the form of milled rice.

The domestic product is shelled on the farms and is transported in brown rice form to the cities with a great saving in bulk through removal of the hulls. However, during the weeks or months in transit through loss of protection of the hulls it becomes rancid and heavily infested with weevils. Milling to remove bran is done in the cities adjacent to the consumer market. In all centers of population, the mills are of Western design and are variants of the Engelberg huller so widely used in the United States. Primitive mills are found only in remote areas where they produce for local use. Whenever Western mills are used, 3 to 5 per cent of talc is mixed with the brown rice before it enters the huller. One is solemnly assured that this is necessary to facilitate milling either as an abrasive or as a lubricant according to which doctrine the miller may prefer. This is perfectly absurd as the same type of mills are used everywhere else in the world without talc except, I believe, in Japan. The talc is nothing more nor less than a makeweight and whitening agent. The mills are not equipped with fans, conveyors, elevators, or other labor-saving accessories. It is common practice to leave a few per cent of loose bran in the milled rice as further makeweight. What with weevils, bran and talc, Shanghai and Nanking rice is the dirtiest I have ever seen. By the time the housewife has washed it till the rinsings are clear and picked out pebbles and weed seeds she may lose 10 per cent of the original weight, and certainly leaches away nearly all remaining traces of bran vitamins. Food adulteration is, I fear, frequent in China. I saw melons being injected with canal water with quite a modern hypodermic syringe.

Brown rice is unsalable in the cities. Mayor Wu, an able executive and a Harvard graduate, was offering it in Shanghai at one-third discount through government channels but found no takers. White rice, though dirty, readily commanded a 50 per cent higher price. Weevils may add to the protein content and even to its quality but they have no eye appeal. Brown rice is still advocated in the English press but is clearly a lost cause.

Parboiling of rice is advocated by some enthusiasts, and a variant of it is practised in one locality near Shanghai. China Food Industries is experimenting with more modern versions of the process. However, the cost of a modern plant under present conditions is prohibitive. Fuel costs in China for artificial drying of parboiled rice will in any case exceed the cost of synthetic

vitamins to make good the losses in milling operations. In India, where the climate permits sun drying, parboiling is more economical. Throughout densely populated China fuel for cooking is at a high premium.

In the Philippines rice is never transported in brown form. As in the United States, it travels short distances as rough rice but enters trade as milled rice. The mills are of Western type and much more fully equipped than those of China. Hand mortars and other primitive machinery have almost disappeared and brown or undermilled rice is a forgotten issue. Talc is not used in milling, and the final product is clean and up to American standards except that broken grains are less rigorously sorted out. At the time of my visit much rice was being imported from wherever it could be obtained, but prior to the war the Islands produced about 95 per cent of their needs. Rice was in short supply in 1946 and sold at about two or three times United States prices or four or five times pre-war Philippine prices. Japanese regulations, slaughter of work animals for meat, and destruction of mills and equipment were responsible for the decline in production. Planting is rising fairly rapidly as work animals are redistributed to the rice areas. The previous rice economy should be restored within two or three years. Many other aspects of economic restoration will be longer delayed for the extent of wanton destruction of sugar centrals, cigar and cigarette factories, as well as dwellings and public buildings is much greater, relatively, in the Philippines than in China.

Rice culture in the two countries is quite similar. Fields are usually small, to permit leveling and dyking for flooding during the growing season. Plowing and planting are done in fields already flooded. This renders the water buffalo almost indispensable. In the wetter climates there is accordingly little prospect of the adoption of tractors and other large Western farming implements. For the main crop the plants are set out by hand from seed beds. This requires large amounts of labor. In the Philippines, a second crop is often grown by broadcasting of the seed in a manner more comparable to that in America. Irrigation is usual in China but in the Philippines rainfall is usually sufficient in the growing season to keep the paddies flooded. In China the rice is cultivated during growth by a narrow hand harrow drawn back and forth between the rows which are only a hand's breadth apart. This is not done in the Philippines where the average yields accordingly tend to be lower. Oriental yields are quite comparable with those in the United States where, however, the expenditure in hand labor is trivial by comparison.

The quantitative incidence of beriberi in China is quite unknown though it has frequently been reported sporadically. It appeared in considerable volume in the Chinese army during the war and is recognized as a serious problem in South China by the majority of physicians. However, the point is made by some that the civilian population diversifies its diet by the use of vegetables more than soldiers do when in the field. In Central China, vegetable consumption is much higher than in the Philippines. A few regard beriberi as a minor disease in China but there are no statistics to support either view. War conditions caused considerable outbreaks of beriberi, especially in prison camps in Shanghai, where white rice imported by the Japanese constituted an unusually high proportion of the diet. As surrounding areas were brought under Japanese control in 1940–1941, making farm produce more accessible to Shanghai, beriberi in the city and camps declined conspicuously. Post-war UNRRA surveys in starvation

areas show no extensive occurrence of beriberi. Presumably the low caloric intake of white rice and the forced use of roots, grasses, etc., had protective effects.

The Philippine situation is quite different. Relatively good mortality statistics were kept for years up to the time of the Japanese occupation. Figures on the total incidence were, however wholly unreliable. Total deaths in the Philippines were 15,000 to 20,000 annually, about one-fourth of them infants. Average mortality rates ranged from year to year from about 100 to 130 per 100,000 population. Among the several provinces, rates varied from as low as 3 to as high as 460 per 100,000 population, and it is consistently true that higher mortalities were found in the major rice-producing provinces. During the war beriberi was frequent in prison camps and also rose somewhat in the civilian population in some areas. Since the recapture of Manila beriberi is said to have reached double the pre-war levels in some provinces but disturbed conditions have rendered the collection of comparable statistics difficult. The preliminary results of a medical survey now in progress in Bataan indicate an incidence of clinical beriberi to the extent of 5 to 7 per cent of the population according to Dr. Juan Salcedo. Beriberi is rated by the Philippine Department of Health as second in importance only to tuberculosis which has risen steeply with war privation.

It seems clear that the only possible early corrective for beriberi in the Philippines is the artificial fortification of white rice. By heavily fortifying a small portion of the grain, coating it to prevent washing losses, and then mixing this product with white rice in the proportion of 1 to 200, as proposed by Furter, *et al.*,[1] it should be possible to accomplish the result at a cost within 25 cents per capita per annum. However, many practical problems remain to be solved. To achieve their solution, arrangements were made with the Philippine Department of Health and the National Rice and Corn Corporation to provide such fortified rice for the population (90,000) of Bataan for a period of 1 to 3 years to the exclusion, as far as possible, of other forms of rice.

The project is under the immediate direction of Dr. Juan Salcedo, Jr. of the U. S. Public Health Service and the Philippine Department of Public Health and Welfare, as a part of a program of public health rehabilitation. Included in the plans is a continuing medical survey of nutritional diseases which will serve to indicate what effect the use of the new rice may have upon public health. It will also be necessary to supervise the mixing of the highly fortified "premix" with white rice at numerous rice mills and to devise a system of effective market inspection to prevent the sale of ordinary white rice by merchants either fraudulently or otherwise. Since the fortified rice is not distinguishable by eye from ordinary white rice this may present real difficulties.

Government and scientific Filipino leaders are very cordial to the idea and it appears that nation-wide adoption of the practice will come quickly if commercial feasibility and public health benefits from it are demonstrated in Bataan. Attempts to organize a similar project in Shanghai failed because of preoccupation of the government health and food authorities with problems of greater urgency. However, the Philippine experience may prove a valuable example for other rice eating Asiatic countries in the future. A serious shortcoming of this approach for the Orient is the present need for importation of the vitamins at the expense of much needed dollar exchange.

Starting with the ambitious title

"Prospects of Improving the Food Supply of the Orient," it may seem an absurd descent to close with an experiment in rice improvement in Bataan. Yet one must begin somewhere, preferably with something concrete, economical, capable of early introduction, yet of a broad significance. The larger problem of a general improvement of food supply can be undertaken only little by little. It is but one phase, though an important one, of raising the entire standard of living of Oriental peoples to something comparable to that of the West. It will affect and be affected by every aspect of the overall economic life, by industrial development in mining, manufacturing, transportation, and communication, capable of affording employment to millions of non-farm dwellers. Naturally it will be most intimately dependent upon agriculture: the choice and excellence of cultivation of food and fiber crops, the extension of animal husbandry for meat and dairy products, the diversification of production both for safety against drought and pestilence and for variety in dietary. These must come by the same slow processes that they have come in the West, by founding agricultural schools and colleges and extensive experiment stations and by concomitant development of manufacturing industries to furnish outlets for raw materials.

The greatest present bar to progress along these lines is the want of the vast capital which is required. An adequate supply of trained leadership is perhaps equally important. A keen and discerning choice of early objectives is essential. Selection of the most feasible and significant undertakings requires the utmost of statesmanship. Some concentration of early attention upon drainage, irrigation and flood control works seems in order. Reforestation applies equally vitally in great areas of both India and China. Japan has long practised effective reforestation. Production and application of vast quantities of fertilizers could do much for farmed-out lands, especially in these three countries and in Java. Without diligent, intensive, and skillful development along all these lines it will be impossible for the Orient to support its present vast populations according to standards which have been accepted in the West. Advance of sanitation and preventive medicine has imposed a death rate approaching the Occidental on a birth rate which is still Oriental. Emigration to less populated mountain and jungle areas of Asia can afford only limited relief. Crowding of populations must become ever more acute unless unforeseeable influences operate to reduce the present rate of multiplication.

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An Analysis of the Wilson-Worcester Method for Determining the Median Effective Dose of Pertussis Vaccine*

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IN a study leading to the development of the "intracerebral" mouse protection test, proposed by Norton [1] as a means of evaluating the potency of *Hemophilus pertussis* vaccine, a statistical method was needed for analyzing the results obtained within a single experiment and between different experiments. Therefore a study of the techniques now in use was undertaken in order to select the one that would be best suited for interpretation of such data. The ultimate purpose, however, was the selection of a statistical method which could be recommended for use in the assay of pertussis vaccine.

It was considered essential that the method would provide a statistic which would be in conformity with those criteria that are recognized as being essential for a bioassay analysis. These have been stated or implied by both Gaddum [2] and Bliss,[3] namely: (1) a clear statement of the theoretical formulation of the estimate, (2) a statement of its exact standard error, (3) a minimum sample error of the statistic, and (4) a measure of assurance that the estimated relation between two biologic products at the ED 50 will hold throughout the range of dosage. In addition it was deemed necessary to include three other criteria, namely (1) that different computers using the method would obtain the same statistic, (2) that the statistic would be in agreement with one calculated by any other standard efficient method, and (3) that its computation could be done with ease and speed.

The statement of error is considered of particular importance. In the pertussis vaccine experiments, we are dealing with relatively small samples of animals. Therefore in order to evaluate with any precision, the response due to the vaccine, it is essential that there be some expression of the experimental or sampling errors. This need in biological assays has been realized by many workers; particular attention was directed to it by the British Pharmacopoeia Committee in 1932.[4] Nevertheless there has been deplorable lack of its use.

The methods that have been most widely used in the United States are the Probit method of Gaddum [2] and Bliss [5] and the so-called Reed-Muench method.[6] (It is of interest to note that the latter method, although independently developed, is essentially the same as the Behrens [7] method which had been in use in Europe prior to its publication by Reed and Muench.) The Probit method has proved its value in bioassay and it is generally considered the best to use in exact work, but it has the disad-

* Presented at a Joint Session of the American Statistical Association and the Vital Statistics and Laboratory Sections of the American Public Health Association, at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 8, 1947.

vantage that the computations are complicated and not too easily comprehended by many workers in problems of bioassay. The simplicity of the Reed-Muench method has contributed to its popularity. It, however, does not provide an exact statement of error and lacks other information that is desirable.

Other methods or modification of the Probit method have been proposed for bioassay problems by a number of workers, among whom are Karber,[8] Litchfield and Fertig,[9] Berkson,[10] Wilson and Worcester,[11] Knudson and Curtis,[12] and Thompson.[13] Each, with the exception of the Wilson-Worcester method, is either not applicable to the set-up of the pertussis test or fails in one or more phases to meet the criteria previously stated.

The Wilson-Worcester method, rather recently proposed, uses the logistic in place of the integrated normal curve for obtaining the probability of an observed response in a sample. Explicit and not very complicated formulae are given for the determination of the ED 50 point and its standard error and also for determining whether the ratio of two assays at the ED 50 point will hold, within the sampling error, throughout the range of dosage.

In this paper we shall attempt to show that the Wilson-Worcester method furnishes a statistic for the analysis of the results of the pertussis test which is in agreement with the one obtained by the Probit method. In addition, the statistics obtained by the Reed-Muench method will be given. This method has been used rather widely in bioassay problems and it was the first that was given consideration in the present problem. It will be shown that the Reed-Muench estimate is not always in complete conformity with the one obtained by the Probit method.

Technics—

Only a brief description of the mouse protection test and the Wilson-Worcester method will be given.

In the animal test, three doses of vaccine varying 4 or 5 fold are used to immunize mice in groups of 15 to 20 each. Their immune response is determined by survival following intracerebral injection of an amount of culture approximately 250 times the median lethal dose.

The ED 50 estimate by the Wilson-Worcester method for a three dose test is obtained by making two combinations of the percentages of survivals, which are used to make entrance into a double entry table provided by these authors.[11b] A factor is extracted and multiplied by the logarithm of the dilution increment. This product is either added to or subtracted from the logarithm of the middle dilution to give the median effective dose. The table also gives the value of that parameter which specifies the slope of the curve at its 50 per cent point, to the end that the experimenter may determine whether the accord between the slopes is sufficient to justify comparison at the ED 50 point alone. The quantities proportional to the standard errors for both the ED 50 and the homogeneity factors are also provided in the table.

Comparison of the median effective doses calculated by the Probit method with those calculated by the Wilson-Worcester method and by the Reed-Muench method—

The results from about 60 tests have been analyzed by the three methods. A comparison of the ED 50 values obtained by the Wilson-Worcester method with those obtained by the Probit method for 49 tests is presented graphically in Figure 1. The two estimated values for a single vaccine are plotted as one point, using the Wilson-Worcester ED 50 as the ordinate and the Probit ED 50 as the abscissa. It is evident that there is very close agree-

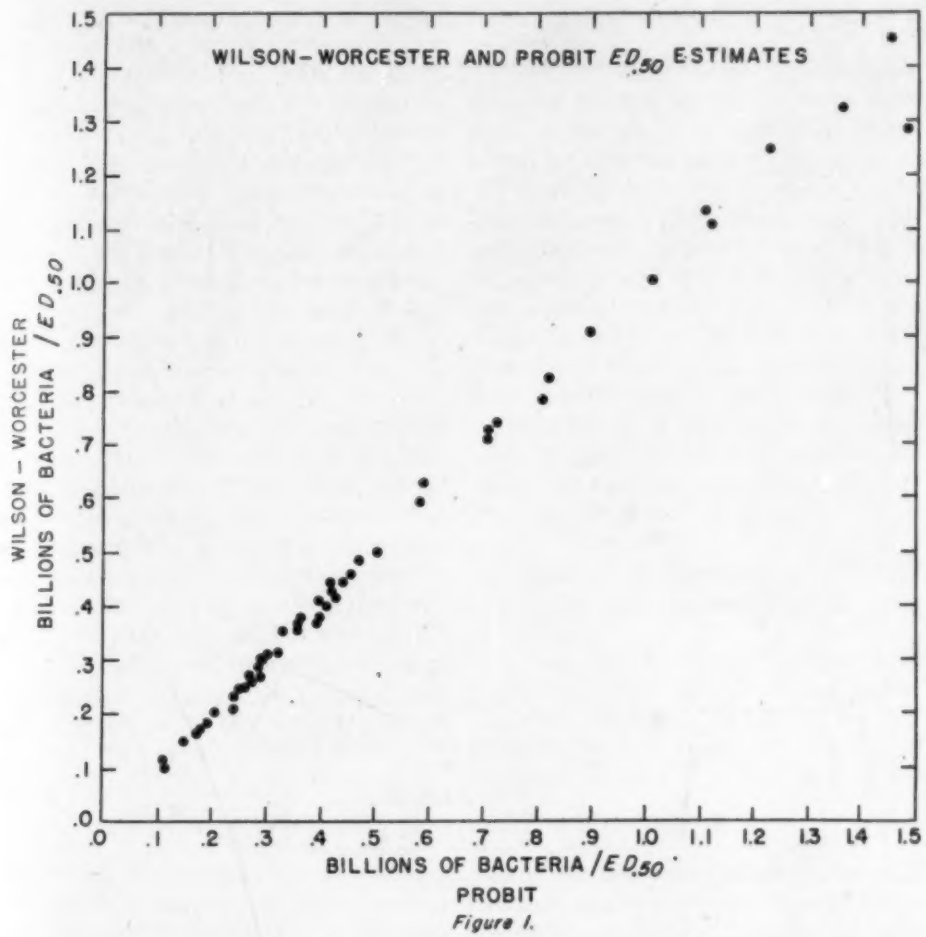
WILSON-WORCESTER AND PROBIT ED.50 ESTIMATES
WILSON - WORCESTER BILLIONS OF BACTERIA / ED.50
BILLIONS OF BACTERIA / ED.50
PROBIT
0.0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0 1.1 1.2 1.3 1.4 1.5

Figure 1.

ment. From the ED 50 obtained by the Wilson-Worcester method, the ED 50 by the Probit method can be predicted with a fair degree of accuracy and vice versa. It may be seen that if a line were fitted to these points, it would pass through the origin. This demonstrates that a predicting equation would not contain an arbitrary constant which would have to be added to the Wilson-Worcester estimate in order to predict the Probit estimate. Therefore the Wilson-Worcester estimates are directly proportional to those of the Probit method and there would be no "bias" term in a predicting equation.

In Figure 2, there is shown a graph which was similarly prepared by plotting the Reed-Muench ED 50 estimate and the Probit ED 50 for the same 49 vaccines. In contrast, however, there is lack of complete agreement which is evidenced by the scattering of the points. In this case, a prediction of the ED 50 value of one method from that of the other method would be less successful. Furthermore, it is doubtful whether one line would be sufficient to fit all points. It appears that a separate line should be fitted to the highest values and another to the next lower values with possibly a third to the lowest values. A line fitted to the upper values would certainly intercept the X-axis.

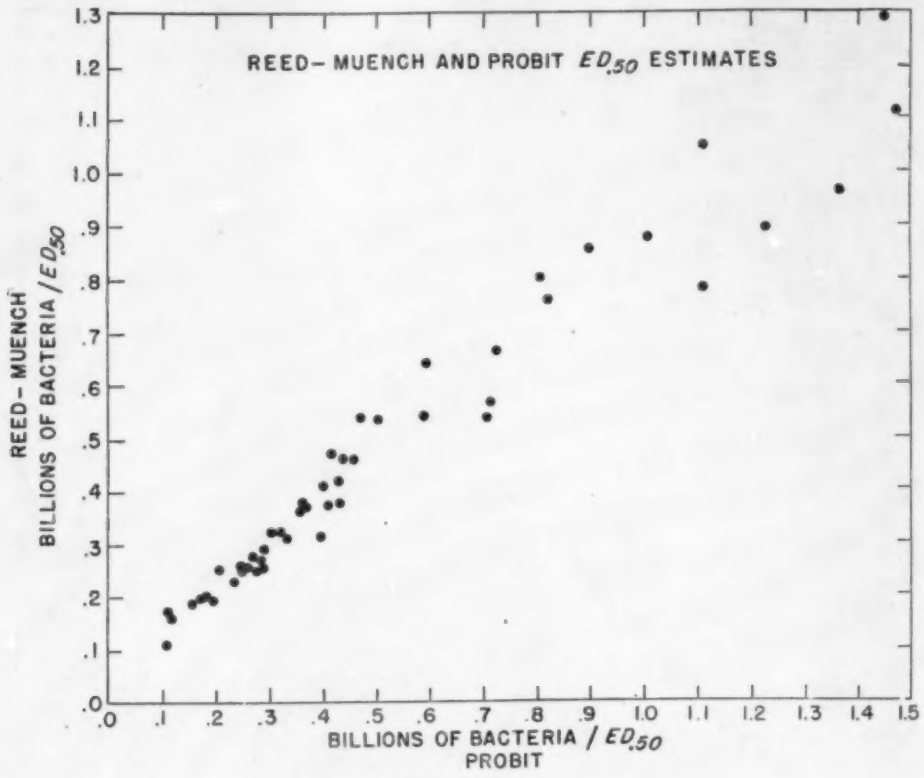

Figure 2.

Thus a predicting equation for these values would contain a constant. In other words, the ED 50 values estimated by the Reed-Muench method may be biased relative to those obtained by the Probit method, with the greater incidence of disagreement being evident when the ED 50 value is not close to the middle dilution. This lack of conformity was to be expected, for it had been shown previously by Irwin,[14] that under certain conditions of spacing and number of doses employed, a bias is introduced in the estimation by the Reed-Muench or similar methods.

Elimination of inconclusive experiments—

Among 58 tests, 49 of which were used in compilation of Figures 1 and 2, there were 8, which on the basis of their standard error established by the Probit method, were interpreted as being inconclusive. The results of these differed from the accepted ones in that either the percentages of survivals at all three dilutions were almost the same, or the percentages, although varying somewhat, did not reach sufficiently close to the 50 per cent point to permit an estimate of the ED 50 within the range of dilutions tested. In the first case a line fitted to the percentages against the doses would be practically parallel to the dose axis and in the second case the ED 50 estimate could be obtained only by extrapolation. The rejection of these tests by the Probit method came only after involved calculations.

Similarly, when the Wilson-Worcester method was applied, the same 8 tests were rejected; one other was also re-

jected. In contrast, however, the rejection came very early in the calculations. The table contains no value for entry if the difference between the proportion survivals at the first and third dilutions is less than 0.30. The authors omitted values below this point because the standard error increases very rapidly in those tests where three dilutions and small samples of animals are employed. With this omission in the table, a test is automatically rejected as being inconclusive at the beginning of the analysis and the computer is spared the time-consuming calculations required by the Probit method before rejection.

In accepting the difference of 0.30 as the critical difference between the highest and lowest response, there are the possibilities of accepting experiments which are inconclusive and rejecting experiments which are conclusive. However, until further information is available, this arbitrary criterion can be accepted with the assurance that both types of errors will be kept to a minimum.

The rejection of a test by the Reed-Muench method, in case of equal numbers of survivals at different dosages must be done subjectively as there is no exact formula for establishing the standard error. Too often a 50 per cent point has been derived by accumulation of survivals and deaths without taking into account that an equal response had been obtained by dilutions of agents that varied many times, although Reed and Muench warned against blind use of the method. In the other case where the 50 per cent point is outside the range of dosage the Reed-Muench method is also not applicable.

An illustration of advantages obtained by comparison over the entire range of dosage—

In one experiment, two vaccines were being compared. They are designated as 3M and 3H in Table 1. By the

TABLE I
NON-HOMOGENEITY OF TWO PERTUSSIS VACCINES

Vaccine		Survivals	$ED_{.50}$		Limits of two standard errors	Homogeneity constant α
No.	Dose	Total	Reed-Muench	Wilson-Worcester		
	(million)		(million)	(million)	(percent)	
3M	1500	9/15			35	
	300	6/16	582	765	and	0.79
	60	2/15			289	
3H	1500	12/15			60	1.95 ± 0.54
	300	4/15	618	612	and	limits for 2σ
	60	0/15			168	3.03 and 0.87

Reed-Muench method the ED 50 estimates were 582 and 618 million bacteria respectively. From these figures alone it might have been interpreted that 3M was slightly better in protective activity than 3H. In contrast, by the Wilson-Worcester method, the respective ED 50 estimates were 765 and 612 million bacteria with limits of two standard errors expressed in percentages, of approximately 35 and 290, and 60 and 168 respectively. It is clear that the standard error of the ED 50 for 3M is rather large and it may be suspected that the factors causing this error are not entirely due to the variability of the test animals. Furthermore, the ratio of the two vaccines at the 50 per cent point was not valid at other points. This lack of parallelism between the action of the two vaccines is shown in the last column of the table. If a comparison is to remain valid over the whole range, the values of a which specifies the slopes of the curves must be near enough alike so that the difference between them may be ignored. In this case the value of a for 3H is within the limits of 3.03 and 0.87 unless a one in twenty chance is operating. But the value of a for 3M, which is 0.79, falls outside these limits. It therefore is indicated that the two vacancies are not homogenous in capacity to induce a like response in mice. One explanation for this difference is that 3M contained some residual toxicity which interfered with induction of immunity by the largest dose.

SUMMARY

The results of a large number of "intracerebral" mouse protection tests of pertussis vaccines have been analyzed by the methods of Wilson and Worcester and of Reed and Muench in comparison with the Probit method. The Wilson-Worcester estimates of the ED 50 were as exact and consistent with the Probit estimates. The formulae of the former are simpler and the calculations less complicated and less time-consuming. Tests that were rejected by the Probit method as being inconclusive were likewise rejected by the Wilson-Worcester method.

The Reed-Muench estimates of the ED 50 were not entirely consistent with the Probit estimates. Furthermore, the calculation of the ED 50 by the Wilson-Worcester method does not take any longer than by the Reed-Muench method. With the expenditure of an additional few minutes, an exact estimate of a standard error and a test for validity of comparisons at points other than the ED 50 can be obtained by the Wilson-Worcester method but not by the Reed-Muench method. With this information the experimenter is better able to assess the meaning and importance of the results relevant to the agent, while making due allowance for the errors caused by disturbing influences.

An example of the informative nature of the Wilson-Worcester statistic in contrast to the comparative lack of information provided by the Reed-Muench statistic has been given.

This study suggests that the Wilson-Worcester method is adequate for use in the assay of the pertussis vaccine.

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Recommendations for Control of Rabies

Early in 1947 a subcommittee of the New York Academy of Medicine prepared a report, with recommendations, on the whole problem of rabies control. This report is based upon a questionnaire sent to state health departments and Canadian provincial health authorities, and on information secured from various governmental departments such as the U. S. Public Health Service and from other agencies such as the National Research Council and the Rockefeller Foundation which has carried on a nine year research project in Alabama at the request and with the coöperation of that State Health Department.

The report indicates a recent increase in rabies among both man and animals, dogs, cattle, and cats in that order being the chief sufferers. It analyzes the legal situation and control measures in a number of states and reports on recent scientific developments.

Among the recommendations are:

1. Uniform national control measures.

2. Transportation of dogs and other susceptible animals regulated by federal and state coöperation, with vaccination as a prerequisite for entry into a state.

3. Rabies in man or animals should be a reportable disease and the figures published in *Public Health Reports*.

4. Annual licensing and vaccination of dogs; in urban areas licensing should be contingent upon vaccination.

5. Standard quarantine measures should be promulgated by either or both the U. S. Public Health Service and Bureau of Animal Industry.

6. National Research Council recommendations on vaccination should be generally accepted until further knowledge is available.

7. Every unit of local health jurisdiction should have a dog pound.

8. An educational program by health authorities should explain the necessity for control measures and the efficacy of present vaccines.

9. The U. S. Public Health Service should formulate and administer health provisions governing the importation of dogs and other susceptible animals.

The report includes a list of references and appendices showing the types of rabies legislation and the enforcement agencies of the various states.

The full report is on file with the New York Academy of Medicine. An abridged version of it appeared in *Public Health Reports*, Vol. 62, No. 34 (August 22), 1947.

An Abridged Table of Probits for Use in the Graphic Solution of the Dosage-Effect Curve*

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THE abridged table of probits on page 23 was prepared to facilitate the determination of the 50 per cent effective dose and the slope of the dosage-effect curve and also the standard errors of these two parameters. It is designed for use in the graphic solution proposed by Litchfield and Fertig[1] as a simplification of the precise but laborious method of Bliss.[2]

Although the probit is a function of the proportionate response, the arrangement of the table eliminates the need for computing that proportion, entering a table of areas of the normal curve and transforming the abscissa values to probits. When the Bliss table is available, only the computation is avoided.

Since it is uncommon to use groups of more than 30 animals in active or passive immunity tests, the table is limited to that number. The word *respondents* is used to designate the animals which survive or die.

If 16–30 animals are used at a given dosage, the row is selected in either the right or left margin headed "Number of Respondents." The column corresponding to the number of animals tested is followed down to the previously chosen row. For example, the probit corresponding to 18 deaths among 23 animals tested is 5.78.

For tests employing less than 16 animals, a simple transformation permits entry to Table 1. The numerator and denominator of the proportional response are multiplied by a small integer. That is $5/6 = 15/18$, $5/14 = 10/28$, etc.

In practise, zero and 100 per cent responses have been handled by a rule of thumb. The rule has been to subtract or add 0.5 to the probit corresponding to 1 or (n-1) respondents and place a small circle instead of a point at the appropriate junction of the coordinates. Thus $0/15 \rightarrow (3.50 - 0.5) = 3.00$ or $23/23 \rightarrow (6.71 + 0.5) = 7.21$.

EXAMPLE

The graphic solution of the curve determined by the intra-cerebral challenge of mice immunized against *Hemophilus pertussis* is demonstrated below. The data are adapted from protocols of experiments performed by Kendrick[3] and her associates.

The first column of Table 2 gives the immunizing doses used and the second column shows the ratio of survivors to the number of animals challenged.

It will be noted that there are nominally only 14 mice in the third

* Presented at a Joint Session of the Biometrics Section of the American Statistical Association and the Vital Statistics and Laboratory Sections of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 10, 1947.

TABLE 1

Probits Corresponding to the Indicated Ratio of Respondents to the Number of Animals Tested

Number of Respondents	Number of Animals Tested															Number of Respondents
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
1	3.47	3.44	3.41	3.38	3.36	3.33	3.31	3.29	3.27	3.25	3.23	3.21	3.20	3.18	3.17	1
2	3.85	3.81	3.78	3.75	3.72	3.69	3.66	3.64	3.62	3.59	3.57	3.55	3.53	3.52	3.50	2
3	4.11	4.07	4.03	4.00	3.96	3.93	3.90	3.87	3.85	3.82	3.80	3.78	3.76	3.74	3.72	3
4	4.33	4.28	4.23	4.20	4.16	4.12	4.09	4.06	4.03	4.01	3.98	3.96	3.93	3.91	3.89	4
5	4.51	4.46	4.41	4.37	4.33	4.29	4.25	4.22	4.19	4.16	4.13	4.10	4.08	4.05	4.03	5
6	4.68	4.62	4.57	4.52	4.48	4.43	4.40	4.36	4.33	4.29	4.26	4.23	4.21	4.18	4.16	6
7	4.84	4.78	4.72	4.66	4.61	4.57	4.53	4.49	4.45	4.42	4.38	4.35	4.33	4.30	4.27	7
8	5.00	4.93	4.86	4.80	4.75	4.70	4.65	4.61	4.57	4.53	4.50	4.46	4.43	4.40	4.38	8
9	5.16	5.07	5.00	4.93	4.87	4.82	4.77	4.72	4.68	4.64	4.60	4.57	4.54	4.50	4.48	9
10	5.32	5.22	5.14	5.07	5.00	4.94	4.89	4.84	4.79	4.75	4.71	4.67	4.63	4.60	4.57	10
11	5.49	5.38	5.28	5.20	5.13	5.06	5.00	4.95	4.89	4.85	4.81	4.77	4.73	4.69	4.66	11
12	5.67	5.54	5.43	5.34	5.25	5.18	5.11	5.05	5.00	4.95	4.90	4.86	4.82	4.78	4.75	12
13	5.89	5.72	5.59	5.48	5.39	5.30	5.23	5.16	5.11	5.05	5.00	4.95	4.91	4.87	4.83	13
14	6.15	5.93	5.77	5.63	5.52	5.43	5.35	5.28	5.21	5.15	5.10	5.05	5.00	4.96	4.92	14
15	6.53	6.19	5.97	5.80	5.67	5.57	5.47	5.39	5.32	5.25	5.19	5.14	5.09	5.04	5.00	15
16		6.56	6.22	6.00	5.84	5.71	5.60	5.51	5.43	5.36	5.29	5.23	5.18	5.13	5.08	16
17			6.59	6.25	6.04	5.88	5.75	5.64	5.55	5.47	5.40	5.33	5.27	5.22	5.17	17
18				6.62	6.28	6.07	5.91	5.78	5.67	5.58	5.50	5.43	5.37	5.31	5.25	18
19					6.64	6.31	6.10	5.94	5.81	5.71	5.62	5.54	5.46	5.40	5.34	19
20						6.67	6.34	6.13	5.97	5.84	5.74	5.65	5.57	5.50	5.43	20
21							6.69	6.36	6.15	5.99	5.87	5.77	5.67	5.60	5.52	21
22								6.71	6.38	6.18	6.02	5.90	5.79	5.70	5.62	22
23									6.73	6.41	6.20	6.04	5.92	5.82	5.73	23
24										6.75	6.43	6.22	6.07	5.95	5.84	24
25											6.77	6.45	6.24	6.09	5.97	25
26												6.79	6.47	6.26	6.11	26
27													6.80	6.48	6.28	27
28	For tests employing less than 16 animals,													6.82	6.50	28
29	let 5/6 = 15/18, 5/14 = 10/28, etc.														6.84	29

TABLE 2

Ratios of survivors to the number of mice challenged with 40,000 H. pertussis *organisms following immunization with the specified doses of pertussis vaccine; the logs of the products of the immunizing doses X 10^{-7} and the probits corresponding to the observed survival ratios.*

Immunizing Dose in Billions	Survivors / No. Tested	Log (Dose X 10^{-7})	Probit (From Table 1)
.05	0/15	.70	(3.50-0.5)
.20	3/15	1.30	4.16
.80	9/14	1.90	5.37
3.20	14/15	2.50	6.50

group. This could be accounted for by a traumatic death during the first day after challenge. Such animals are excluded from all calculations.

The data to be plotted are given in the last two columns. They are the logs of the doses (raised to a convenient power) and the probit corresponding to the response of each of these doses. Square ruled paper with ten divisions to the inch is very satisfactory for plotting the points.

In Figure 1 the points have been plotted and a line drawn by inspection. A close fit is not unusual in well planned experiments.

The abscissa value corresponding to probit 5 is about 1.73. That is, the log of ($E.D._{50}X$ 10^{-7}) = 173, or the $E.D._{50}$ = 0.54 billion.

The determination of the slope of the line,

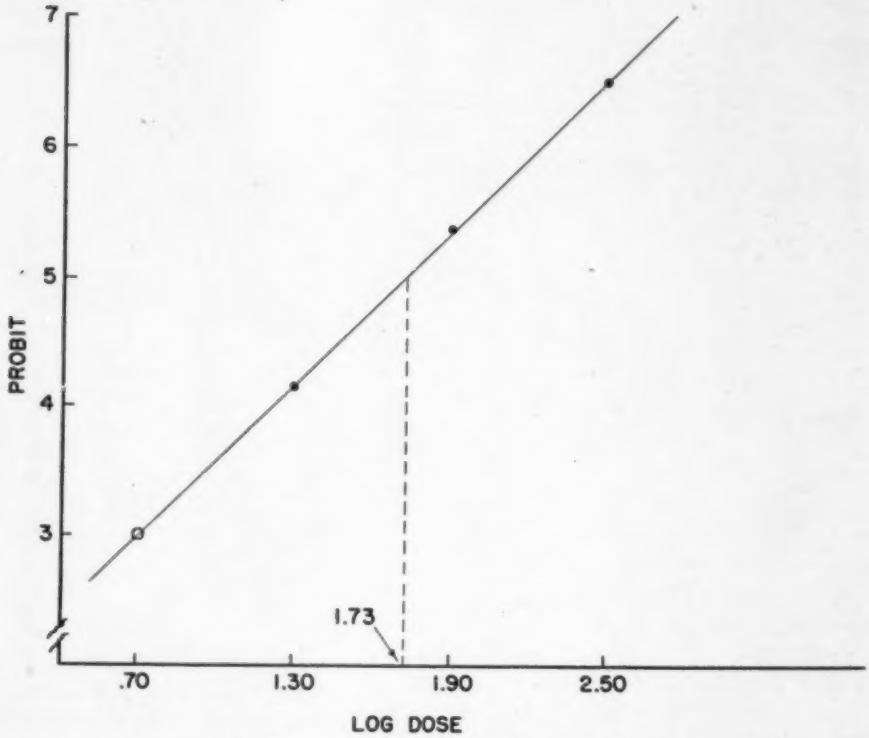
$$b = \frac{y_2 - y_1}{x_2 - x_1}$$

is simplified by using values to yield an integer in the denominator. Here,

$$b = \frac{6.30 - 4.32}{2.40 - 1.40} = 1.98$$

Litchfield and Fertig give the following estimates of the standard errors of the parameters of the curve:

FIGURE 1—Dosage-effect curve determined by challenging four groups of mice injected with varying quantities of *H. pertussis* vaccine. The challenge dose was fixed at 40,000 organisms.



$$SE_{\log ED_{50}} = s/\sqrt{\frac{N'}{2}}$$

$$SE_b = \frac{4}{\sqrt{\frac{N'}{2} \cdot L \cdot \frac{k}{k-1}}}$$

where $s = \frac{1}{b}$, N′ is the total of the animals used at dosages falling between probit levels 4 and 6, L is the difference between the logs of the highest and lowest effective doses and k is the number of doses in the range L.

Making the indicated substitutions,

$$SE_{\log ED_{50}} = \frac{1}{1.98} \times \frac{1}{\sqrt{29/2}} = 0.13$$

$$SE_b = \frac{4}{\sqrt{29/2 \cdot 1.8 \cdot 4/3}} = 0.44$$

The results are then summarized as shown below.

$$\text{Log } ED_{50} \pm SE_{\log ED_{50}} = 1.73 \pm 0.13$$

$$b \pm SE_b = 1.98 \pm 0.44$$

SUMMARY

An abridged table of probits, entered with the number instead of the proportion of respondents, was designed to facilitate the solution of dosage-response curves. The table and an example of its use have been presented.

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Preservice and Inservice Preparation in Health of School Personnel

Role of the Department of Education and the Department of Health in the Inservice Preparation of Classroom Teachers, School Administrators, School Nurses, and School Physicians *

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IN 1918 the report of the Commission on the Reorganization of Secondary Education listed health as the first of the seven cardinal objectives of education. More recently, the Education Policies Commission has stated: "An educated person knows the basic facts concerning health and disease . . . works to improve his own health and that of his dependents . . . and works to improve community health."

The health objective is one for which school people are to be commended. They can be proud that educational leaders had the foresight and understanding to incorporate such an all-important element within the realm of education. The practical application, in many instances, leaves much to be desired.

The schools are charged with the responsibility of the children for a longer period of time than any other public agency. It is in the school that children are first grouped for long periods; and, consequently, it is in the school that the health status of the children can best be improved and that practices and attitudes can be moulded and guided by the educational process.

The school alone cannot do an effective job in the field of public health. The health of children is a responsibility shared by many individuals and groups. It is the child's parents who provide his daily care, who are obligated to see that every possible measure is taken to maintain and improve his health. In order that parents may plan wisely for the child's care from day to day and know what measures are important for the protection of his health, they need guidance from persons whose special training equips them to give such assistance. Thus physicians, dentists, and nurses are all involved with the health of the child.

The school, the health department, other official agencies, and various voluntary groups render their greatest service to the child in his role as a member of society. Each individual and each group has specific training which makes possible unique contributions. Working together, they represent a powerful force.

It is vitally important that the school and health departments work coöperatively to provide an adequate school health program. The official health agency is charged by law with the pro-

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tection of public health. The school has a moral obligation if not a legal one.

In recent years certain developments have brought the health departments and the school systems, at both the state and the local levels, into a closer relationship. Perhaps the most important of these developments is the change in educational philosophy. No longer does the school exist for the sole purpose of teaching specific facts to children. The new concept includes discovering and providing solutions to child needs. As a result, the school has delved into the study of normal growth and development, the measurement of mental capacity, and the relationship of physical to mental health. With this interest in the total child came the realization of the important effect upon child health of the family and the community. At the same time, the health department has realized that most of the distinctly health problems with which it was confronted cannot be solved without the intelligent and enlightened support of the same people with whom the school is concerned. It became apparent that the health of the school child cannot be separated from that of the community in which he lives. Therefore, the ultimate effect of a program designed to attack school health problems as isolated factors is limited from the beginning.

It is generally agreed that the best possible school health program will produce results only in so far as it is a part of a well planned service of community scope. Conditions which affect the growth and the development of the school child exist in his home and community environment from the time of his birth. Deficiencies found in the child of school age often reflect similar conditions in the home. It follows then that the alleviation of these deficiencies depends materially upon the ability of a community to function as a well organized unit.

If this is our concept of the nature of the school health program, then the personnel involved must be trained to do the job. School administrators and teachers will have to master a little of the scientific approach used by the physician, the dentist, the nurse, and the sanitarian. Teachers cannot be satisfied with presenting health facts from textbooks. Neither should teachers expect results from telling children that they should wash their hands after going to the toilet and before meals if handwashing facilities are not provided in the school. Instruction in sight conservation must be supplemented by proper seating arrangement and correctly adjusted window shades. Likewise, health department personnel cannot be satisfied with rendering service alone. They must think of the influence this service can and should have upon the future behavior of an individual. The physician and the nurse must make the health examination an educational experience. The sanitarian needs to understand and make use of educational methods and techniques. All must teach as they serve.

An important objective of the training of the staffs of the two agencies—the school and the health department—is the development of mutual respect of the professional status of each other and an understanding that because of special training and experience each has definite contributions to make.

The objective of either preservice or inservice education is to develop and improve the ability of professional people to render service in a more effective and efficient manner. When these professional services affect the health and welfare of all people and the younger generation in particular, it is doubly important that those working in the field achieve and maintain maximum effectiveness.

Preservice and inservice education programs are primarily the responsibility

of the institutions of higher learning. Public health organizations and other groups conducting special programs for which individuals must receive special training are obligated to make their training needs known to colleges and universities and supplement in various ways the efforts of those institutions. We have followed this policy in our state. It can be said without reservation that the relations of the Department of Health and the Department of Public Instruction with the training schools have been most cordial and effective.

There are certain characteristics in our method of operation in Indiana which are not common in many of the other states. We should like to enumerate some of these features:

1. In 1936 an agreement was entered into by the boards of the two departments. By this agreement, the Director of Health and Physical Education for the State Board of Health serves the Department of Public Instruction in a like capacity. His duties are: (a) to direct the educational activities of the department of state government responsible for the public's health, (b) to recommend sound health procedures to the State Department of Public Instruction, and (c) to provide consultant and advisory aid and other assistance to health and physical education teachers of the schools of the state. As additional personnel was added for this activity, people with teaching experience were selected and their previous training was supplemented by graduate education in public health. It is interesting to know that this arrangement was requested by the Indiana State Association of Health, Physical Education, and Recreation (a section of the State Teachers' Association), the medical group, and the voluntary agencies interested in health.

2. For a number of years the State Department of Public Instruction has depended upon the Public Health Nursing Division of the State Health Department to establish school nursing standards and to recommend nurses for certification.

3. On special official committees and commissions serving one department we find representatives from the other. For example, the State Board of Health is represented on the Commission for Handicapped Children, the Vocational Rehabilitation Council, and the School Bus Safety Committee, all of which are committees affecting directly the Department of Public Instruction. On the other hand, the 1947 General Assembly, in passing local full-time health department legislation, provided that a school superintendent be a member of all county and city-county boards of health.

4. The 1947 Indiana General Assembly passed a law requiring that the State Board of Health and the State Department of Public Instruction coöperate at all times in matters pertaining to school health. Naturally, coöperation cannot be achieved by legislation, but the important thing is that the public has recognized the value of interagency cooperation.

In the country as a whole the preservice training of school health personnel is established as a well defined program. We believe, also, that the inservice training of such personnel should not be left to chance but should be planned as intelligently as the preservice training. For that reason, we, in Indiana, have made considerable effort to place our inservice training on as high a plane as possible. As has been mentioned previously, this is a result of coöperative planning between the State Department of Public Instruction, the State Board of Health, and the state colleges and universities. A picture of this plan of coöperation would not be complete unless we recognized the excellent assistance we have had from the various voluntary agencies concerned with health. For example, we have conducted an intensive 2 week inservice training course in school and community health education during the past four years at one of our state universities. This project has been guided by the personnel of the two official agencies and the university. The State Tuberculosis Association, the State Cancer Society, the National Infantile Paralysis Foundation, the Crippled Children's Society, and the Indiana Chapter of the American Red Cross have contributed materially not

only by providing part of the instructional staff but by furnishing funds with which are paid the participating school nurses, school physicians, teachers, school administrators, public health workers, welfare workers, and lay leaders.

During the 2 week period, those in attendance, through group discussion and the help of consultants from various fields, learn of public health services and facilities available and how to use them. To illustrate, one teacher who attended learned of services available from the Crippled Children's Society. Consequently, she was able to bring these services to a 16 year old congenital syphilitic child in her community. The saddle nose was corrected by plastic surgery; she was given speech correction, trained as a beautician, and is now living a normal, happy life.

In addition to this institute, plans have already been made to inaugurate a similar training program at one of the other state teacher training institutions. Here, emphasis will be placed upon the elementary school health and the physical education programs. This will be a joint effort of the same agencies that have sponsored the previously mentioned workshop.

Another example of this type of cooperation is illustrated by an Institute for Family Life Education. This was conducted during the past summer by the two official agencies in conjunction with one of the state universities. On this occasion, a team consisting of a teacher, a representative from the Parent-Teacher Association, a public health person, and a representative of the Welfare Department was selected from several chosen areas. The Social Hygiene Association, the State Parent-Teacher Association, the Indiana Tuberculosis Association, the Indiana Department of Public Welfare, and the agencies previously mentioned joined forces to create this educational experience with the hope that the teams from these selected communities would determine upon their return home to promote family life education through adult study groups, family counseling, and instruction in the schools.

One of the most successful of our special inservice training efforts has been the training course for school lunch room personnel. This course has been conducted by the Board of Health with the assistance of county and city superintendents throughout the state. Such a course is of a sound educational nature, scientifically correct, and at the same time is of interest to the school lunch committees, teachers, school administrators, cooks, and other school personnel involved in the feeding of children. The course consists of three 2 hour classes. It is broken down into discussions of good housekeeping, the transmission of disease by improper handling and storage of food, and personal hygiene. Included in this program are the services rendered by the personnel of the Bureau of Environmental Sanitation of the State Board of Health whereby the installations and facilities of school lunch rooms are inspected and advice is given for improving faulty situations.

A very effective method of keeping school administrators and other school health personnel informed on developments or problems of school health is by direct communications signed jointly by the State Superintendent of Public Instruction and the State Health Commissioner. A specific example illustrates this technique. Last school year we experienced an epidemic of ringworm of the scalp. Some confusion arose among school people and county health officers as to the proper method of handling those infected with the disease. Consequently, a letter making suggestions as to procedures for control of the condition was prepared by the Chief School Officer and the State

Health Commissioner and directed to all school administrators and all county health officers. The uncertainty surrounding control of the disease was relieved and the understanding between the health officers and the county superintendents was materially improved.

Several years ago, the two departments agreed that schools in the state should receive the *Monthly Bulletin*, the official publication of the State Board of Health. At the present time every school in our state receives, without cost, at least one copy of this publication. From month to month it carries items of special interest to school health personnel or to those interested in school health. It carries articles on particular problems and reports on the various programs developed in the state. Once each year a special issue is published dealing with the school health and physical education programs.

Courses of study in health, physical education and safety, which serve principally as teaching guides but may also be used as material for teacher study groups, are prepared jointly by the two departments and the committees consisting of elementary, high school, and college teachers. The committee work itself is an inservice training experience for the members. In fact, it is possible to earn college credit by doing such work. The finished product, when accepted by the Board of Education, becomes the official recommendation of that agency.

The Board of Health provides consultant services in the field of school nursing. The services may be on general or specific programs. Recently when an epidemic of septic sore throat occurred in one of our local schools, the consultant demonstrated procedures to the school nurse and local community nurse whereby the school and the physicians in the community developed a program which brought the outbreak under control within a short time.

Special meetings and institutes in which personnel of both agencies appear are held in local communities to give additional training to the school health personnel. Problems of school sanitation, nutritional aspects of the school lunch program, control of contagions, etc., are discussed at these conferences. Related to this service is the provision by the state agencies of supplementary resource materials, which are furnished gratuitously to the teachers. These materials are in the form of literature dealing with the developments in the field, recent books, and visual aids, such as the films, "Observation of the School Child" and "This is Robert."

The objective of the routine visitations of the Board of Health personnel as well as those of the Department of Public Instruction is to contribute to the professional growth on the job of our teachers and school administrators.

The sanitarians, nurses, physicians, and others of the Board of Health staff have for many years worked freely in the schools. We believe that this arrangement is much more economical and efficient than would result if provision were made for duplicate personnel.

Our concept of the school health program, as described in general terms and by specific examples, makes it essential that the personnel operating within the field have broad and varied knowledge and experience. Consequently, it follows that the Department of Public Instruction, the Board of Health, the colleges, and the voluntary agencies must coöperate in providing opportunities for securing this knowledge and experience on the job. There exists a high degree of mutual respect between our two departments in Indiana. Our joint obligation is to provide for inservice education of school health workers and to see that the job is well done.

Preservice and Inservice Preparation in Health of School Personnel

Preservice Preparation of Teachers and School Administrators *

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THE writers believe that insight into the complex problems of preparing teachers and school administrators in the health field will be furthered by describing these problems as we see them in California. Our report will not be as optimistic, therefore, as if we had selected the most progressive colleges throughout the country nor will it offer the frustrating picture resulting from an inventory of colleges where health teaching is still a sideline and not an integral part of teacher preparation. We hope that an account of what is happening in one political unit may furnish base lines by which you, who come from other states, will be able to judge how far ahead of us you are.

It is very clear to us that preservice preparation of administrators and teachers in the field of health education depends not only on the policies of our universities and state colleges but also on the policies of the State Department of Education. This point is frequently overlooked by health department personnel who criticise the teacher training institutions.

In the time given us, therefore, we are presenting (1) the problems as the State Department of Education sees them, (2) the problems involved in preparing administrators and secondary teachers in the University of California, and (3) the program now under way in Fresno State College emphasizing the preparation of elementary school teachers.

The State Department of Education frequently sets the pattern for the preservice preparation of school administrators and teachers through the establishment of credential requirements. Such requirements may facilitate or deter teacher education programs on the basis of their flexibility or rigidity. When requirements for credentials are once established it is difficult to obtain additions to or revisions in such requirements, due to many factors, not the least of which is the "vested interest" attitude of college faculties. This situation faces groups who are concerned about improved preservice preparation of teachers and school administrators in health education. Admittedly, health education is a recent emphasis in education when contrasted with the traditionally accepted fields, and has not been represented by sufficiently effective "pressure groups" to secure its wide acceptance in credential requirements.

In California the situation is further complicated by the fact that legislation

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passed in 1918 made mandatory a considerable time allotment in the school program for physical education. This legislation had the definite objective of improving the health of children and youth. In the minds of school administrators then, physical education became synonymous with health education. It is difficult to reëducate them to the need for a health education program which is over and above that provided through physical education. The employment of teachers trained in health education is dependent upon administrative acceptance of the *need* for such training. Thus, any change in certification requirements is predicated upon a change in administrative atitudes. Inservice education for school administrators is an important precursor of better preservice programs in health education for teachers.

The California State Department of Education has recently expanded its service in health education by appointing a consultant to the state staff who is actively promoting the development of better health education programs throughout the state. The department has also been directing an experimental program in health education which commenced in July, 1944, and is partially financed with funds from the W. K. Kellogg Foundation. The first emphasis was placed on inservice education for teachers, administrators and health department personnel. As a result of these efforts, preservice programs for all teachers and the provision of programs for training specialists in health education for the schools were found to be essential. School administrators began asking for teachers who had a more adequate health education background. The project was extended from one college to four of the six state colleges and programs of improved preservice health education were set up for teachers. As yet, the hoped for results of having requirements in health education included in the credentials of all teachers has not been attained. As more teacher training institutions become interested and establish better programs, the possibility of adding health education requirements to credentials for all teachers will be nearer realization.

As the demand for secondary teachers specializing in health education has increased, the State Department of Education has taken an important step forward by recognizing health education as an accepted teaching major and minor for the general secondary credential. This step came about because high school principals wanted teachers who could handle classes in life science and health education. Although secondary school curricula change slowly, it is encouraging to note this development because it indicates recognition of the importance of health education in the high school curriculum—a development which is long overdue.

The need for personnel trained to assume positions as health coördinators and supervisors is evident in the increased requests for this type of service from the field. At present the Division of Health Education, Physical Education and Recreation is working on a statement of the recommended training for a supervisory credential, and will present the proposed recommendations to the State Credentials Commission at an early date. The division is actively promoting the employment of supervisors of health education in city and county school departments and is thus helping to create the demand for better preservice education of such personnel.

As an active promotion of health education continues, both in the State Departments of Public Health and Education and in areas surrounding the four state colleges engaged in the experimental project in health education, the need for better preservice programs

for both teachers and administrators will increase. It is reasonable to assume that these activities will soon be reflected in the credential requirements. It is now evident to us that to secure better preservice training in health for teachers the problem must be approached through (1) increased emphasis on inservice training of school administrators, (2) addition of health education requirements to credentials for all teachers, and (3) setting up of state credentials for supervisors and special teachers of health. All are essential in making apparent the need for better prepared teachers. The State Department of Education is assuming responsibility in these matters.

Primarily the School of Education of the University of California emphasizes the preparation of administrators and secondary school teachers. Credentials for teaching in high schools are obtained only after a minimum of one graduate year of study. In view of the fact that the State Department of Education has no mandatory health education requirements for the secondary credential, the question is—how well prepared are these teachers of mathematics, biology, and French to assume responsibility for the health guidance of students in their classes or advisory groups? Will they understand the need for a school health council; will they be interested in the health as well as the scholarship of their students; have they, moreover, through their living and studying in the University of California, learned something about their own physical limitations and assets?

To answer these questions let us look at the basic criteria for a college health program. Most health educators are agreed upon the following points:

1. An overall health program is needed for all students which includes not only health services, but health instruction and activities contributing to the social, mental and physical health of the student.

2. Living conditions, study conditions, administrative procedures and the conduct of the medical services should exemplify the best of health theory and practice.

3. Learning experiences in basic scientific information should be organized and presented in such ways that students will gain insight into and motivation for healthful living.

4. Basic minimal essentials in health knowledges and experiences should be provided from the fields of biology, psychology, social science and public health. In their applied form these essentials would be found in experiences with personal, family, and community health problems as well as specific applications in the school health program.

To what degree does the University of California meet these criteria in preparing its teachers?

First of all it appears that at present no overall health committee exists which works on problems of health curricula and integration of the many health phases of university life. There are two health committees, one composed of faculty members, the other of students. Neither committee, however, has worked closely with the other nor has either conducted surveys basic to understanding what students are learning about health or experiencing in their varied programs. As a consequence there is little relation between the excellent student health services, the courses bearing on health offered in many departments, and the wide range of activity programs which this large university has to offer.

The university, on the other hand, exemplifies both good theory and practice in many of the health services it makes available to students and in its general administrative policies. Counselling services of high order, thoughtful medical consultations, guidance and psychiatric help are open to all. Optimum living conditions and study facilities are difficult to provide for 23,000 students but the university administration is concerned about the problem and is doing the best it can.

When we raise the question as to the specific information related to health

that is important for all secondary teachers, we must acknowledge that no definite course requirements exist. Perhaps one reason is, as previously stated, that no health education requirements have been made mandatory by the State Credentials Commission; perhaps other departments in the university do not believe that teachers of special subjects should spend time in acquiring such information; perhaps we who work in health and education have not thought through carefully enough the functions of a secondary school teacher in a modern society.

We find, however, that one course in "Growth and Development" is required of all teachers and administrators. All other courses offering opportunities to study health problems in both undergraduate and graduate work are electives. It is true that four of the thirteen fields from which the student selects his teaching major and minor are areas in which various phases of health teaching are included, namely home making, life science, physical education, and social studies. There is also an extensive list of elective courses with excellent health content—courses in nutrition, zoölogy, physiology, anatomy, bacteriology, personal hygiene, mental hygiene, and public health which are open to freshman, sophomores, juniors, and seniors, irrespective of their majors. For example, 500 students enrolled last year in a freshman course in public health. It is not known how many of them will enter the teaching field.

Some studies are needed to show how the elective system has operated in introducing teachers and administrators to health information. It may be that prospective secondary teachers will be found to have selected from the very wide offerings of the university curriculum more courses with health content than is now assumed. Two elective courses—one, "The Administration of the School Health Program," and the other, "Health Problem of the Adolescent," have attracted each year students planning to teach mathematics, foreign language, physical education, history, and other fields. Data are not available to indicate the number of teachers who do not take these courses.

But there is much more to preparing teachers for an understanding of their contribution to a health program than simply requiring them to take courses in personal and community hygiene and the school health program. Most important are the methods of teaching employed in the university. If health is taught to teachers in the academic classroom manner—how can we expect them to view health as a functional part of living? It is at this point that the university finds itself in a most difficult position. Until the present year we have had no laboratory situations in which, through a series of significant experiences with high school students, the prospective teacher and administrator could learn that health is a part of the lives of boys and girls.

Our task at the university is to do the best we can within the existing framework. We may not be able at present to help teachers gain insights into health through joining with instructors in psychology, methodology and subject matter to provide selected unified experiences in the field, but we can improve the methods we use in our own courses. *School Health Administration* and *Health Problems of Adolescents* do not need to be textbook and discussion courses. Several communities are adjacent to the university: communities with social agencies, juvenile courts, schools, recreation centers, and dance halls. These are the teaching situations which we are using this year. At this point it must be mentioned that since this paper was written three further advances have been made, (1) that a rigorous undergraduate major in public health educa-

tion has been accepted by the School of Public Health, (2) that this undergraduate major in the School of Public Health has been accepted by the School of Education as a basis to the graduate year leading to the secondary credential in health education, and (3) the Division of Elementary Education has requested suggestions from the School of Public Health leading to inclusion of more health education emphasis in preparing elementary school teachers.

In Fresno State College where one of the writers is health education consultant, health education is given a significant place in the preservice preparation of elementary school teachers. Efforts are made to provide opportunities whereby students may practise healthful living while preparing to be teachers. These efforts are not always successful. The crowded living conditions and heavy instructional loads make it difficult to insure either good environment or careful guidance of student programs.

An objective of the state college is to interest the prospective teacher in the total welfare of the child. One teaching method which has helped the teacher develop this attitude has been participation in the health service program of the College Elementary School. Here she helps in the medical examination of the children. She acts as a receptionist or assists the child in getting ready for the examination. Then she observes the examination and sits in on the conference of the parent, physician, nurse, and teacher. She sees the relationship between poor home conditions and lack of adjustment of the child. She realizes the importance of a good home, proper nutrition, and the relationship between parent and community attitudes toward the health of the child.

These individual student-teacher experiences with the medical examination of the elementary child, are followed by a conference between the school staff and student teachers. At this time the school physician emphasizes further the importance of the school health examination and gives time for discussion and demonstrations. Each year parents wishing to have their children accepted in the College Elementary School come to the college for an interview. The children are given tests of various types at this time. This occasion offered opportunities for participation by student teachers. They, at the time parents are applying for entrance, observed the coördination of the child, alertness, emotional behavior, initiative or dependence on the parent, signs of normal development, and the attitude of the parent toward the child.

In the College Elementary School, the parents and teacher for each grade level hold discussion group meetings which are a stimulating and helpful part of the school health program. The student teacher attends these meetings. For instance, when the mothers and the teachers of the fifth grade children meet to discuss some aspect of the health or adjustment problems of their children, the student teacher who is working in that room also participates in the meeting.

The health education courses which all elementary school teacher candidates are required to take are: (1) "Principles of Healthful Living," (2) "The School Health Program," and (3) "Growth and Development of the Child." "Community Health" and a course in "General Nutrition" are recommended. If the student teacher's program will permit, she is encouraged to take these courses.

Learning through solving problems is basic to all of the work. In "Principles of Healthful Living," a freshman orientation course open to the general college student, the content is worked out through self-inventories and committees of students which select the units to be studied. Through this

problem solving approach the instructor tries to achieve the following results:

1. To help the student develop a constructive interest in his own health problems.
2. To develop a type of health awareness which comes from thinking through one's own problems and from searching for reliable information to help solve these problems.
3. To gain insight into the complexities of psychosomatic problems; to see the relationship between what he does (health practices) and how he feels (health status).
4. From this understanding, to change certain health practices and to strengthen desirable ones.

It is hoped that practice in the problem solving technique will give the preservice teacher insight into the effectiveness of this method.

A course in "School Health" has this past year been offered in the evening so that inservice teachers and nurses might attend. The class was made up of experienced teachers, public health and public school nurses as well as students of the Fresno State College who were preparing to be teachers. This class was also organized on a discussion, research and field experience basis. The theoretical work and outside reading in the field of school health organization was accompanied by experience in public health departments, voluntary health agencies and private health and welfare organizations. The experience of attending California Youth Authority Conferences and the Cancer Institute; assisting with the work of the Mobile Units of the Fresno County Tuberculosis Association; attending and assisting the baby clinics set up by the Bureau of Maternal and Child Hygiene of the State Department of Public Health, or of working in the Nutritional House all contributed to good discussion and a better understanding of the interrelationships and ramifications of the problems of school and community health.

The inexperienced preservice teachers were at first a little awed by the older teachers and nurses. It soon became evident, however, that they too made real contributions to the thinking of the class. Very helpful were their fresh outlook and idealism. These served as a basis for some excellent "down-to-earth" interpretations of the difficulties to be met in attempting to improve school health and community health conditions and forced the inservice teachers and nurses to reëvaluate their own practices. An excellent example of the practical value of this work was found in a survey made by some of the nurses in the class. They interviewed the executive officers of all of the health service agencies in Fresno and published a bulletin giving details regarding the organization and the methods of getting help for school children.

Fresno State College has a college health committee which is vigorously attacking its problems of curriculum, environment and medical services. Similar committees are working in the other three state colleges included in the project.

SUMMARY

We have tried to point out that in California the state colleges, universities, and State Department of Education are working closely together. Each has problems peculiar to its own administration but each has some small achievement to record. More progress is being made in preparing elementary school teachers to understand their responsibilities for the health of children, than in preparing teachers for the secondary schools. In the state colleges teachers are learning how to integrate health services and observations of children's behavior into their teaching and guidance program through participating in these activities in preservice training. It is hoped that the near future will bring about similar opportunities for prospective secondary teachers and administrators.

Preservice and Inservice Preparation in Health of School Personnel

Contribution of the Medical School and the School of Public Health *

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THE breadth and the significance of the task of preparation of school personnel are impressive. The objectives are numerous, and their attainment calls for a plan whereby all groups that can help may contribute to a program of effective utilization of community resources.† Factors which contribute to coöperative action include trained leadership to provide for inservice and preservice training, joint school health committees, at all levels, and periodic review of results with planning for next steps.

The broad scope to be kept in the foreground, includes now as in 1943,[1] the following:

"Health protection, through sanitation of the environment, through provision for a mental atmosphere, and through application of tested protective measures, such as immunization against certain diseases; (2) health guidance, through the provision of health services which embody constructive educational and guidance principles; (3) health education with team work among teachers, nurses, physicians, dentists, and others; (4) physical education properly integrated with all other elements of the health program; and (5) nutrition, with each of the school personnel making his appropriate contribution."

The preparation of school personnel refers to physical and mental status and to understanding and application of the principles and practices of personal and public health.

The contribution of the schools of medicine may be both indirect and specific for future physicians. The amount and quality of the contribution depend upon the interest and the resources of the faculty. It has become increasingly recognized that preventive medicine and public health (with which much of school health service is associated) are integral parts of the social and environmental circumstances of the family. There are increasing efforts in general to lay foundations during the time that anatomy, bacteriology, and physiology are being taught, as then the student can become interested in the importance of health and the prevention of disease. In the third and fourth years, the students' interest is likely to be focused heavily on clinical medicine. Effective teaching of preventive medicine includes a utilization of the clinical approach, the community approach, and the social approach. Stimulation of thinking on the part of both student and teacher is necessary. The professional personnel engaged in elementary

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† This discussion is based on observation from visits to some schools of medicine and of public health, on reports, on interviews, and on replies from a brief questionnaire sent to accredited schools of public health.

or high school work or in college student health service needs to have good clinical skill and an ability to help teach and interpret—not as classroom teachers but as consultants and advisers.

The ability to lay a sound and comprehensive foundation on the part of a school or a faculty of medicine depends also upon its resources. A school of medicine located in an area without a full-time health department or a first class combination of hospital facilities is seriously handicapped. A school of medicine located in one of the 25 states found in 1944 by the National Committee for Mental Hygiene to have no community psychiatric clinics is limited in its contribution to mental hygiene which is such an important factor in a program of health service for school children. In thinking of the importance of the whole child, the whole teacher, and of the interrelationships of the parts of our social structure, the significance of this factor is apparent.

In some schools of medicine there is evidence that the student health service has possibilities for teaching. However, observation indicates that lectures on school health to medical students are likely to be of less interest than those on communicable diseases—in one school ranking 24th on a list of 29.[2] Only a relatively small number of medical schools place school health specifically on the schedule of lectures or seminars; but certain schools, as, for example, some in New York City, have either school health lectures, seminars or clinics or a combination of these activities. Most of the contribution of schools of medicine is of a more indirect nature through training given in nutrition, orthopedics, pediatrics, physical medicine, psychiatry, and preventive medicine. A few schools of medicine deal with eye problems, behavior difficulties, and distribute literature, and provide for orientation in field observation of school health services. At least one department of pediatrics includes on its staff a coördinator with school systems and college education departments. Some schools of dentistry, likewise, provide for sensitization in regard to school health. In case studies, opportunity may be provided for visits to sight conservation and other school classes and for observation of physical examination in the presence of a parent.[3] Changing interests of the growing child and of the college student require that the teaching of nutrition be carefully planned if better practices are to result. Interpretation of field and laboratory findings should go hand in hand as emphasized by Sir Wilson Jameson in his stimulating report on significant progress in Great Britain.

Many schools of medicine aim, therefore, to help medical students to acquire an understanding and appreciation of the school health program and its interrelationships with education, public health, pediatrics, and internal medicine. Few are in position to be complacent about results.

Only five of the schools of public health have apparently developed a special course of study in school health service, with a similar number in school health education, and one in school nursing. Some of these and related activities are developed in schools of public health in conjunction or coöperation with a school of education. The approach is likely to be primarily from the standpoint of the health officer rather than from that of a specialist in school health. There is a great need to develop advanced training plans for school medical and dental personnel, as judged by the shortage of qualified personnel; but salaries must be elevated and positions made more attractive.

In four or five schools of public health, field work is offered in school health education including observation and sometimes practice teaching. Some work is undertaken to familiarize stu-

dents with school organization and practices. Inasmuch as programs for preschool children have such an important relation to those for school children, instruction and training designed to acquaint students with activities of the division of maternal and child health, may contribute to improved standards of school health service. At one university, special course work is offered in school health, coördinated with other phases of public health teaching and field experience (including health surveys), as, for example, with community health education, and foundation or core courses in sanitation of the environment, mental hygiene, nutrition, and public health practice.

In considering objectives and future aims, the following potential contributions by schools of public health may be considered:

1. To acquaint all public health students with the purposes, procedures, and results of complete school health programs, including: (a) provisions for a healthful environment, (b) health appraisal and counseling, (c) control of communicable diseases, (d) care of emergencies, (e) health and safety instruction, and (f) care and education of the handicapped.

2. To provide opportunities for the specialized preparation needed by prospective school physicians, school dentists, directors of school health programs, public health nurses, and other personnel concerned directly with the health of school children.

3. To work coöperatively with schools or departments of education, in preparing prospective classroom teachers, health educators, and school administrators.

4. To encourage research relating to school health problems.

5. To assist in the work of national, state, and local committees concerned with school health problems.

6. To coöperate with educational groups in conducting inservice educational programs for teachers and for specialized health personnel.

Mutual understanding between the participating groups is important. To this end, the faculty and graduate students of the department of education and of the department of public health in one university conduct jointly a seminar course on basic educational issues. A study is made of such persistent, basic educational problems as aims, functions, and agencies; physical, mental, moral, and social growth of school children. This seminar work involves wide reading, group discussion and the writing of comprehensive papers with a twofold purpose of orientation and integration. Simultaneously, in a seminar on school health, consideration is given to the health of children and to programs of school health education and service. The organization and conduct of such programs are discussed with particular attention to the interrelated role of teachers, physicians, dentists, and nurses.

For joint planning and coöperative action, committee or council organization and participation are essential. Such organization provides an opportunity for important contributions of staff representatives of schools of medicine and of public health.

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Preservice and Inservice Preparation in Health of School Personnel

Contribution of the School of Nursing and the Graduate Course in Public Health Nursing *

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THIS consideration of the contribution of the school of nursing and the graduate course in public health nursing to the preservice and inservice preparation of nurses for school health work is based on the assumption that the nurse will carry a fourfold responsibility in the school. She will:

1. Provide health counseling service to students
2. Mobilize home, school, and community resources to deal with health problems
3. Serve as an "information center" for school personnel
4. Assist in the control of environmental factors affecting health

In order to establish a framework for discussing these tasks, it is further assumed that she will need the following skills in order to meet the above responsibilities satisfactorily:

1. Thorough knowledge of physical, mental, and social developmental patterns of the young child and adolescent
2. Knowledge of good preventive medical care and of community health facilities
3. Thorough familiarity with health appraisal methods in current use
4. Knowledge of the general philosophy of public education in the United States and of educational administration
5. Mastery of counseling skills

The contribution of the school of nursing to the preparation of the nurse in the school is largely one of providing background information and skills upon which more specific preparation must rest. Under the best conditions, the graduate nurse without special training in public health should have a sound knowledge of the basic sciences as they relate to nursing, an understanding of economic and sociological factors as they affect health and medical care, and an understanding of the general health and emotional needs of the well child.

The degree to which students achieve the above knowledge is variable. The approximately 1,300 schools of nursing in the United States vary tremendously in the number and quality of educational facilities at their disposal. Opportunities for clinical experience are likewise unevenly distributed.

If we consider the university school of nursing as the desideratum, and review its potential contribution, it becomes apparent that much can be done to improve the nurse's ability to assist in the health supervision of the school child.

The *preclinical* period provides instruction in basic physical sciences which should both enable the nurse to develop techniques on a sound basis, and also to interpret to students the relationship between certain recommended health practices and the sciences they may be

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studying. Psychology, now required in most schools, gives her the foundation for understanding the drives, the emotional needs, and the developmental patterns of children. The social studies help her to relate health needs and problems to the environmental pattern and to gain an understanding of the place of the child in the family and community of today.

Through the health service she herself receives, the nurse should get an orientation to preventive medical care which will set the stage for more intensive instruction at a later period.

Of course, it is quite true that the nurse-student may have all of the courses mentioned above without any of the benefits described. The psychology hours may be devoted to distinguishing between the Bond and Gestalt psychologists, or reviewing the findings of animal experimentation instead of an honest effort to understand people and their behavior. Sociology may resolve itself into a series of definitions to be learned by rote, and ignore the fascinating interrelationships of cultural environment and personal adjustment. It is equally true that some schools of nursing with no visible means of support, academically speaking, may accomplish these same objectives through the wisdom and patience of instructors who either by design or by intuition, teach these basic understandings informally. But properly related to life needs, such "required courses" may contribute significantly to the understanding of the nurse and thus indirectly to her ability to assist in the health program for school children.

During the clinical period there are again many opportunities—some realized and some overlooked—for developing skills and knowledge of usefulness in school nursing. The most notable development is, of course, the trend toward teaching all care of the sick as it relates to the well person. Before studying the typical disease conditions of children, most good instructors of pediatrics are attempting to present the picture of the well child—his behavior, his developmental history, his physical and emotional needs. Care of the sick child is then approached from the standpoint of how it *differs* from care of the child who is well. The student nurse has an opportunity to assist in the care of well children as a basic part of her work. Unfortunately, because it is expedient to do so, most of such experience has been offered at the preschool level—there is much less opportunity for experience with the school age child for the undergraduate nursing student.

A second significant development in nursing education which is germaine to our discussion is the wide use of the "patient study" approach at the point where nursing information is being integrated. For example, the undergraduate nurse will have classes in medical nursing during which attention is focused upon the disease and its various manifestations. Later, as part of her clinical experience, she will study Johnny Jones who has rheumatic fever. At this second point the emphasis has shifted from the disease to the patient. The demands for care which result from the disease itself are, of course, given due consideration. But at the same time, there is discussion of the multiple factors involved in nursing guidance—of Johnny's eating habits and food likes and dislikes; what it means to him to face physical limitations, the effect of parental attitudes on his emotional state, the school adjustments which may have to be made, and so on. This approach lays the groundwork for more complex counseling techniques which are necessary for the school nurse.

A third trend in undergraduate nursing education which is of importance in the preservice preparation of the school nurse is the inclusion of com-

munity experience as part of the clinical work of the student nurse. This is accomplished in many ways. Sometimes the student nurse visits with a public health nurse, she may make home calls with the social worker or on her own, she may be assigned to a public health agency or to a community hospital for a block of experience. Such experience is boistered by consideration of community application and aspects in the regular classwork. There may be opportunities to work directly with school age children either in the school with the school nurse or in teaching home nursing or first aid classes to school age children.

It is obvious from the above that the experience and instruction given in the undergraduate nursing curriculum—even in the best we now know, does not equip the nurse to render the expert service needed in the school health program. However, it should be equally obvious that good basic nursing education is an important foundation for advanced work. Every effort should be made to encourage the development of soundly financed educationally centered schools of nursing. It is necessary, in other words, to make a good *nurse*, before it is possible to make a good *school nurse*.

Advanced preparation is necessary for effective and comprehensive preparation of nurses for school health work.

Public health *courses* may be offered at either the graduate or undergraduate level. There is a growing tendency to consider preparation for staff positions as essentially undergraduate in character, and preparation for work at the supervisory or consultant level as of truly graduate caliber.

In an effort to determine the present school nursing offerings in courses in public health nursing, questionnaires were sent to directors of the courses which have been approved by the National Organization for Public Health Nursing, and to the schools of public health. Certain general trends were evidenced in the 30 replies which were received.

1. In general, school nursing is considered as an integral part of the preparation for public health nursing rather than as a field of specialization.

Only 6 of the 30 schools indicated that they offered a special course of study in school nursing, and 2 more indicated that they offered courses in school health education which were open to nurses. Only 8 had a recommended sequence of courses for those wishing to specialize in school nursing.

2. Most schools include instruction in school nursing as a part of the public health nursing course. Eighteen schools reported that they offered a course in school nursing, and in 14 schools it was a required course. Twenty-one schools offer field work in school nursing, and in 13 schools it is a required course for all students. Most schools which did not offer a course in school nursing indicated that school nursing aspects were included in the general public health nursing courses.

3. There is apparently an effort on the part of some schools to meet inservice as well as preservice needs. Thirteen schools reported that the course in school nursing was offered during late afternoon or evening hours.

The postgraduate course in public health nursing can make a vital contribution to both the preservice and inservice education of the nurse in the school. There are great differences in emphasis in the approved courses in public health nursing, due in some measure to differences in the administrative structure in which they operate. Courses established in schools of education may give very comprehensive preparation in educational philosophy, educational psychology, and school organization and administration, but put less emphasis on epidemiology, statistical analysis, or official health organization. Courses established in schools of public health, on the other hand, may stress control measures and community organization, placing less emphasis on the educational structure and function. Certain fundamentals should, however, be considered as minimum requirements

for school health work, and the necessary administrative adjustments made to assure nurses who will work in schools on adequate job preparation.

First, there should be intensive and rigorous preparation in the general aspects of preventive medical care. Such preparation should be factual, comprehensive, and of sufficient concentration to assure expertness in the application of such information to the needs of the school community. There is no substitute for thorough knowledge of methods of communicable disease control and epidemiological study, fundamentals of good environmental sanitation, and public health procedures and problems in relation to non-communicable disease.

Second, there should be an opportunity for advanced study in child development and child and adolescent psychology, combined, if possible, with clinical observation and field experience. Such study should emphasize the frequently neglected middle childhood years as well as the preschool and adolescent periods. Opportunity to observe behavior under stress as seen in the mental hygiene or behavior clinic is of great value in understanding the behavior of "normal" children.

Third, there should be thorough grounding in present-day methods of health appraisal, and if possible opportunities to participate in health appraisal activities. Actual practice in such procedures as the use of an audiometer, vision testing, and observation of laboratory tests used in determining some aspects of nutritional status are invaluable. The nurse in the school should be thoroughly familiar with the use of miniature chest x-ray films as compared to the use of standard size plates; with the use of tuberculin tests as compared with x-ray examination in tuberculosis case finding; she should be able to interpret with confidence the various methods for determining vitamin deficiencies and similar appraisal procedures. Since many of the schools of this country are in small communities, she should know also the simple observational techniques which may have to suffice in the absence of more elaborate equipment.

Fourth, the nurse should be acquainted with the general field of education. As a minimum she should know the philosophical and psychological bases for modern educational practice, and the organizational structure within which American public education functions.

The nurse cannot function as an adviser to teacher and school administrator unless she knows something of their work. She has to recognize that you cannot interrupt an important unit of study to accomplish some health teaching extraneous to the unit; that administrators cannot always adjust the school budget at will or set requirements beyond those required by the health department without considering the attitude of the school board to such a procedure. She needs to understand *why* the school administrator must assume overall responsibility for everything which goes on within the school.

If nurses, teachers, and school administrators can attend the same classes, much is gained, since through studying together they also learn to work together.

Fifth, and last, the nurse in the school must have intensive preparation in counseling techniques. This provides the means of putting to work the skills and facts which are part of her professional equipment. Class work in individual and group teaching should be supplemented by supervised practice either as part of generalized public health field work, or as a separate entity. Preparation, at least to the level of orientation, in social case work, is essential for the development of this skill.

If she is to work with teachers, parents, and students, it is important that the nurse have the greatest possible adaptability and finesse in guiding the health behavior of others.

In reviewing these requirements, it becomes immediately apparent that with the possible exception of the fourth requirement (and even this would present a question) all of these knowledges and skills are just as basic in the general field of public health as they are in school nursing. This, in turn, would lead to the conclusion that good public health nursing preparation needs very little, if any, supplementation to become good school nursing preparation.

If the college or university sponsoring a public health nursing course is to realize fully its community responsibility, it will be concerned with continuing inservice education for nurses as well as with preservice preparation. Summer workshops, evening classes or seminars, extra mural projects or studies can be used not only to compensate for deficiencies in basic training, but to develop higher levels of skill and appreciation in the more experienced worker. It might also be said that such participation on the part of the university will, in turn, vitalize and refresh its "regular" courses!

Both schools of nursing and advanced courses in public health nursing have a big part to play in the preparation of nurses for school health work. In general, this can best be accomplished through fullest possible development of regular curricular offerings rather than by the establishment of separate courses of study in school nursing.

Frozen Precooked Foods*†

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WITHIN the past decade a new and almost startling array of commercially prepared cooked food products has made its appearance in frozen form. The most recent type, frozen precooked foods, was unknown before the war but now may be found in many of our markets in wide variety and sometimes in unique combinations.

Most of the established food manufacturers who entered this field have developed excellent frozen precooked foods. Frequently these frozen precooked foods have been prepared or manufactured by novices in the field of commercial food packing and processing. The enthusiasm of some of these novices, who were temporarily encouraged by abnormal shortages of food containers for the more common food products, by war price conditions, and by tremendous consumer demands for food at any price, has been unlimited. Economic problems and quality control problems were considered equally unimportant when the shelf life of such products was a period of only days or weeks.

The termination of war activities has abruptly altered this situation, however, and some of the enthusiasts have ceased their activities in frozen precooked foods. The survivors are becoming more interested in applying, in their field, the knowledge now available concerning control of food processing. This control, which is so essential to the manufacture of acceptable food products of permanently high quality, has been modified to meet the particular conditions of frozen precooked foods. However, for products of this nature there have been no established standards, no definitions of components or their specific proportions. Variations in presumably the same product of the same manufacturer have sometimes been so great that they were notable by visual inspection. Furthermore, packaging methods and materials have frequently furnished only meager protection for some products.

In the belief that some information could be obtained relating to the public health aspects of these new products, a microbiological survey was made of all the commercially prepared frozen precooked foods available in New England markets. An earlier report on the microbiological aspects of some 70 types of these foods was made by Proctor and Phillips.[1] This study has been further extended until over 100 types of such products have been investigated.

The viable bacterial populations in the products examined varied widely, some foods having plate counts of less than 50,000 per gm. and a few having

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TABLE 1

Percentage Distribution of Coliform Plate Counts on Various Types of Frozen Precooked Foods

Product Type	Number of Samples	Per cent of Samples Having Counts in Excess of		
		50	100 (per gm.)	200
Meat products	57	10.5	3.5	0.0
Stews	53	22.6	5.7	1.9
Fish products	110	32.7	15.4	2.7
Creamed meat and creamed poultry	68	22.0	10.3	4.4
Poultry products	56	33.9	10.7	1.8
Creamed fish	38	39.5	26.3	10.5
Vegetable products	59	1.7	1.7	0.0
Soups	20	0.0	0.0	0.0
Pastries	14	0.0	0.0	0.0
Miscellaneous	27	1.1	0.0	0.0

plate counts in excess of 1,000,000 per gm.

When direct microscopic examinations were made, the counts were much higher, the range being from 40 x 10^6 per gm. for the high level to $< 0.5 \times 10^6$ per gm., which is the minimum count obtainable by this method. As the results of the direct microscopic method are indicative of both living and killed bacteria, they reflect the history of the microbiological quality of all the components of a food mixture. This method was also found to serve as an excellent control during the process of manufacture, because an answer regarding quality was available in minutes, not days.

In general, the pastry products were found to exhibit the lowest bacterial

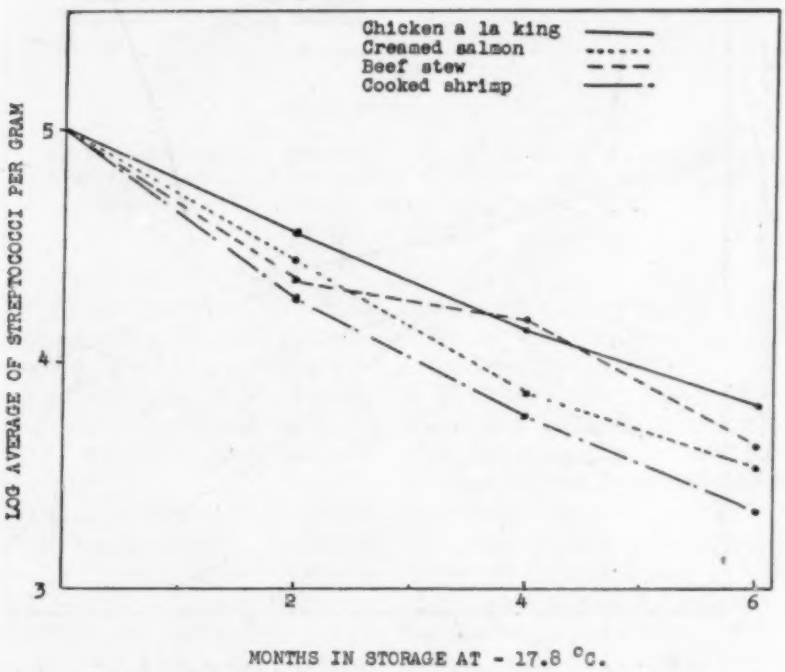

FIGURE 1—Experimental Inoculation Studies. Survival of an Alpha-Type *Streptococcus* No. 1 in Foods Stored at —17.8° C. (Three samples per point.)

populations. The highest counts were in creamed fish products, which frequently showed direct microscopic counts of over 5,000,000 per gm. and coliform plate counts in excess of 100 per gm.

A summary of the data obtained on the coliform plate counts on the various types of frozen precooked foods is shown in Table 1. The majority of the samples of each different type of product had coliform plate counts that were less than 50 per gm. In general, the highest coliform counts were obtained on samples of creamed fish products, poultry, creamed meat, and creamed poultry, and fish products.

In meat and poultry products the predominant types of microörganisms were *Micrococcus* spp., in fish products *Flavobacter* spp., and in soups *Bacillus* spp. Many of the various products contained appreciable numbers of *Sarcina* and *Achromobacter* spp. *Staphylococcus* spp. were found in meat products, stews, poultry products, and creamed products, although in lower proportions than the other genera just mentioned.

Experiments were conducted to follow, by means of plate counts, the death rates of the microbiological populations of some frozen precooked products when stored at 0° F. Notable decreases in counts occurred in the first few months. However, it was found that similar products stored at the same temperature

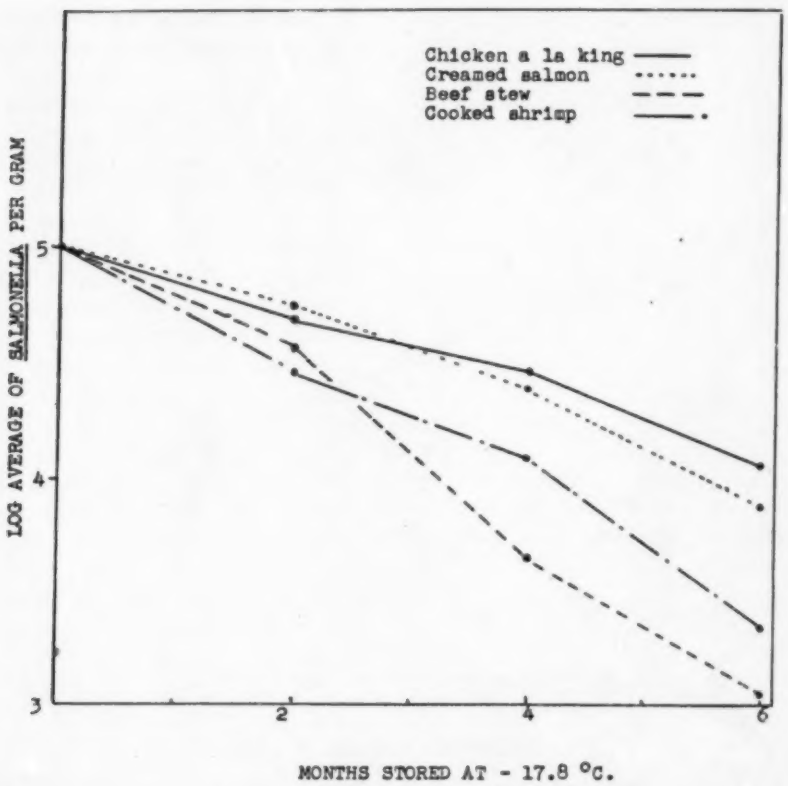

FIGURE 2—Experimental Inoculation Studies. Survival of *Salmonella enteritidis* in Foods Stored at —17.8° C. (Three samples per point.)

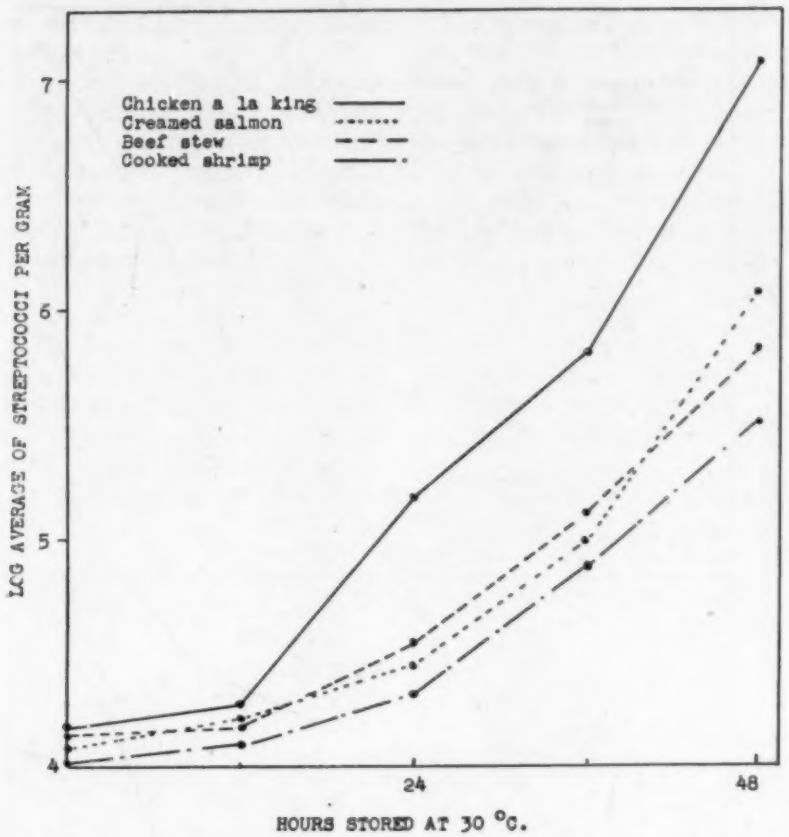

FIGURE 3—Experimental Inoculation Studies. Growth of an Alpha-Type *Streptococcus* No. 1 in Foods at 30° C. After Storage at —17.8° C. (0° F.) for One Week. (Three samples per point.)

for over 30 months were not sterile. These findings also emphasize the value of conducting direct microscopic counts as an aid in evaluating quality, because plate counts of viable organisms do not show the complete microbiological picture.

Comparable tests with cooked foods containing experimentally inoculated cultures of food poisoning strains of *Staphylococcus aureus*,[2] alpha-type *Streptococcus*, and *Salmonella enteritidis*, which were frozen and stored at 0° F., indicated that in some foods at least 10 per cent of the inoculated organisms survived such storage for 6 months. Figures 1 and 2 indicate the trend of such changes with the 2 latter organisms.

Moreover, other investigations indicated that bacterial pathogens of these types in frozen precooked foods can increase in numbers after storage at defrosting temperatures of 30° to 37° C. for 6 or 8 hours. These increases, shown in Figures 3 and 4, lend additional emphasis to the need for proper storage of all such foods, both in the normal distribution channels and in the consumers' hands. At lower thawing temperatures, bacterial proliferation occurs less rapidly but was found to

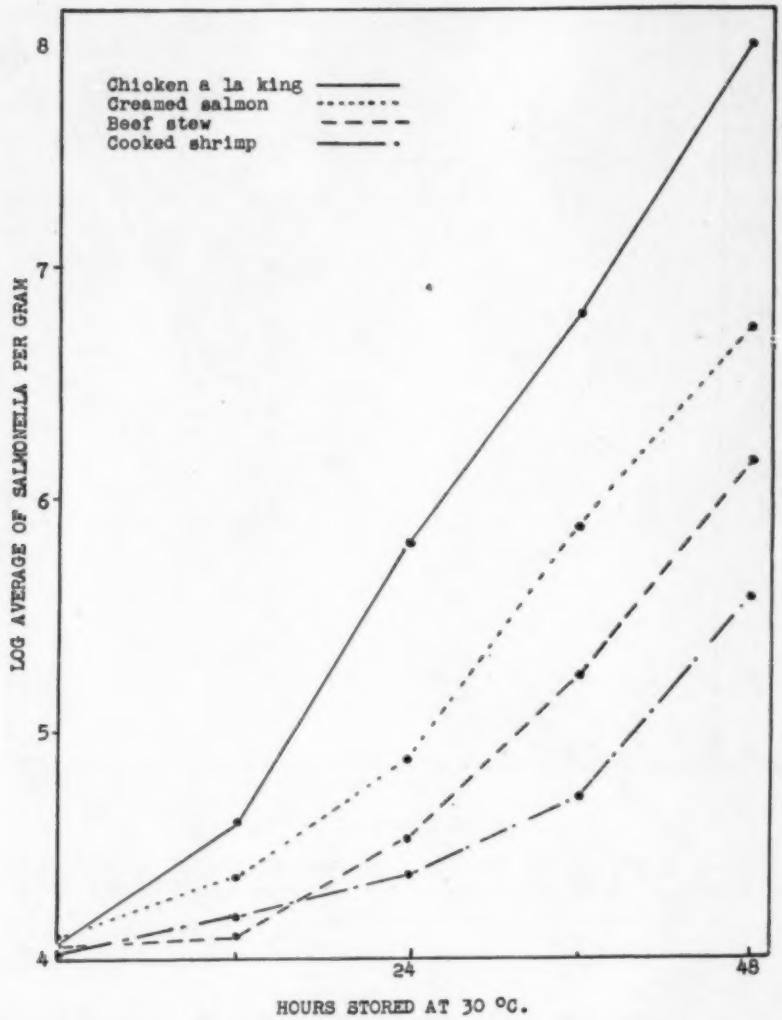

FIGURE 4—Experimental Inoculation Studies. Growth of *Salmonella enteritidis* in Foods at 30° C. After Storage at —17.8° C. for One Week. (Three samples per point.)

occur at 50° F. within a few days after packages of frozen precooked foods were removed from 0° F. storage.

All too often frozen foods are found displayed in retail stores in the thawed condition. Both store managers and health authorities should do everything in their power to obviate such potentially dangerous conditions. Continuous storage of foods in the frozen state until immediately before use will aid in precluding the possibility of food infections and intoxications.

In the course of this research, several techniques have been developed that aid in the identification of microorganisms. One of these is a surface-plating technique used in conjunction with impression slides in order to identify large numbers of bacterial colonies more rapidly. Another development is a device to inoculate large

numbers of bacteriological culture tubes simultaneously.*

Those concerned with this new phase of the food industry, frozen precooked foods, should set up microbiological standards for each product and plant control procedures to insure that these standards are maintained. A number of the more experienced companies in this field did this before their products ever went on the market. Some producers have never considered this phase of product evaluation, know nothing about the microbiological quality of their products, and will continue to remain in ignorance unless standards are established for their guidance or control.

The American Public Health Association has played an important part in other food problems of importance to the public health. Similar leadership in the problems of this new but important field of the food industries would be appropriate and equally beneficial to the food industries and to the consumer public.

ACKNOWLEDGMENT: The authors are grateful to Dr. G. M. Dack, Director of the Food Research Institute, University of Chicago, for supplying the cultures of *Salmonella enteritidis* and alpha-type *Streptococcus*.

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* Descriptions of these techniques will shortly be published elsewhere.

Dog, Fox, and Cattle Rabies in New York State*†

Evaluation of Vaccination in Dogs

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AN epizoötic of rabies has been in progress in New York State since 1943. The unusual features of this prevalence have been the introduction and spread of fox and cattle rabies, coupled with a striking drop in the incidence of the disease in dogs despite its continued widespread occurrence in these other species. There is reason to believe that the decline was largely due to the extensive dog vaccination program carried out, and the circumstances offer an excellent opportunity for evaluating the effectiveness of this control measure. A preliminary review of this experience was presented one year ago.[1] The additional year of observation has served to confirm the preliminary findings and to add to their significance.

THE PROBLEM

Rabies has been a problem in New York State for many years, as is illustrated in Table 1, which presents the reported cases of the disease by species of animal for each year since 1925. In 1926 the responsibility for controlling the disease was placed by law in the hands of the State Department of Health, prior to which time control had been a function of the State Department of Agriculture and Markets. Records indicate that rabies has existed since the state became a settled area.

Since 1926 the disease has been largely localized to the lower Hudson Valley. However, starting in 1943 rabies appeared in southwestern New York, and in the following year a new focus developed in the southcentral portion of the state. The reporting of 15 rabid foxes in Chautauqua County in 1943 was cause for alarm, but after careful consideration it was concluded that the rigorous application of dog control activities would in due course probably solve the problem and that fox rabies would disappear spontaneously. This apparently did occur as predicted, since further cases in foxes have not been reported from that area to date. In 1945 the disease appeared in foxes in northern Broome County, where dog rabies was prevalent, and since that time fox and cattle rabies has assumed a dominant role. Thus, during 1946 a total of 308 foxes and 440 cattle were reported as rabid, as compared to only 377 dogs. This difference is even more striking during the first 9 months of 1947, when rabies was reported in only 40 dogs as compared to 218 foxes and 173 cattle.

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* Presented before the Epidemiology Section of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 8, 1947.

† The data in this paper refer to rabies in Upstate New York (New York State exclusive of New York City).

TABLE 1

Reported Annual Incidence of Rabies
New York State, Exclusive of New York City
1925–1947
By Species

Year	Dogs	Cattle	Foxes	Humans	Other	Total
1925	130	0	0	1	1	132
1926	195	0	0	0	1	196
1927	238	3	0	0	2	243
1928	218	2	0	4	1	225
1929	204	2	0	1	1	208
1930	142	1	0	2	3	148
1931	70	1	0	0	1	72
1932	48	0	0	0	1	49
1933	18	0	0	0	0	18
1934	21	0	0	0	1	22
1935	29	3	0	0	0	32
1936	69	1	0	0	1	71
1937	62	0	0	0	1	63
1938	75	0	0	0	0	75
1939	155	1	0	0	0	156
1940	100	2	0	0	0	102
1941	107	0	1	0	1	109
1942	62	0	0	0	2	64
1943	176	10	1	0	2	189
1944	233	47	15	1	18	314
1945	503	87	50	1	22	663
1946	377	440	308	0	49	1,174
1947 *	40	167	218	0	31	456

* Through September 24

Although the reporting of animal rabies is far from complete, it is believed that the data accumulated in Upstate New York are more adequate than those available in many other states. Essentially all the reports represent cases of rabies proved by laboratory examination. Only 32, or slightly over 1 per cent, of the 2,801 cases listed for the past 5 years have been reported on clinical grounds only. Five laboratories located strategically throughout the state

FIGURE 1

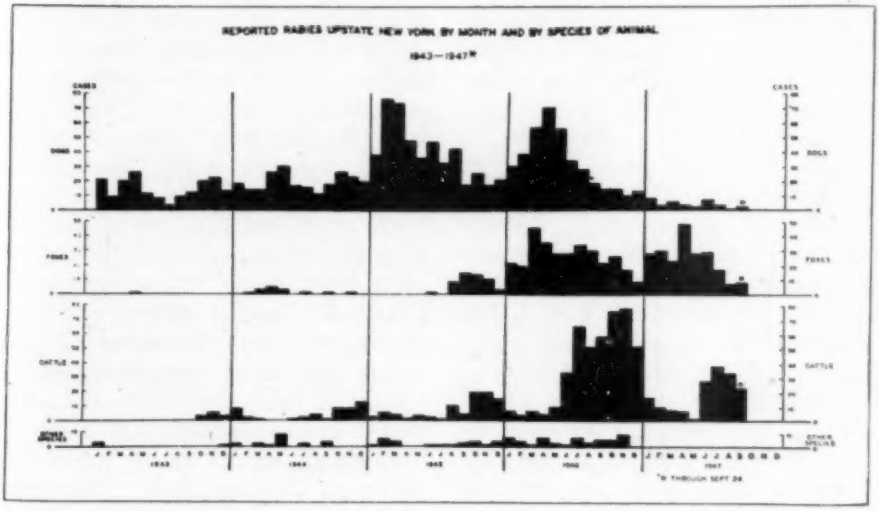
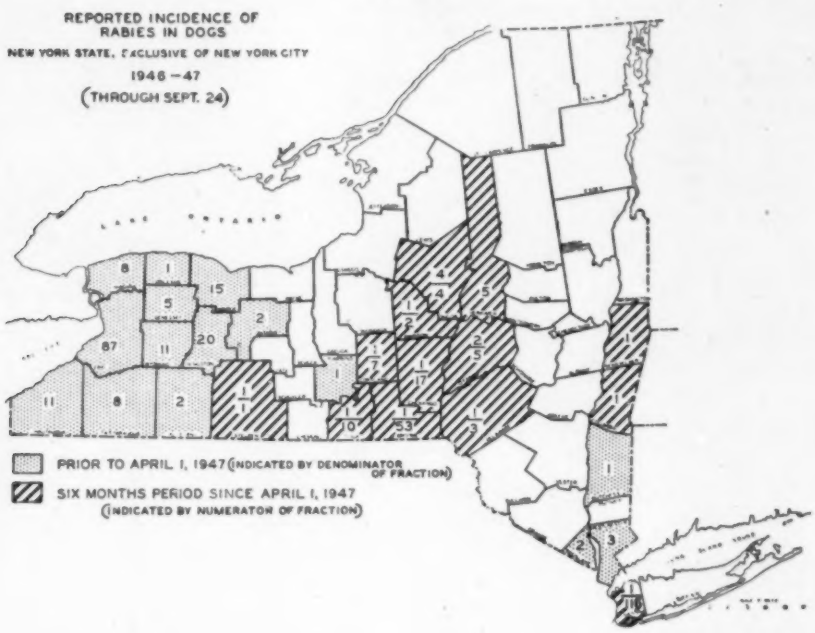


FIGURE 2


REPORTED INCIDENCE OF RABIES IN DOGS
NEW YORK STATE, EXCLUSIVE OF NEW YORK CITY
1946–47
(THROUGH SEPT. 24)
PRIOR TO APRIL 1, 1947 (INDICATED BY DENOMINATOR OF FRACTION)
SIX MONTHS PERIOD SINCE APRIL 1, 1947 (INDICATED BY NUMERATOR OF FRACTION)

have been approved for these examinations, and the uniform practice has been to use mouse inoculation procedures whenever initial examination of the brain fails to reveal Negri bodies.

Figure 1 presents the details of monthly incidence of the disease by species over the past five years. The striking seasonal variation in the reported occurrence of dog, fox, and cattle rabies is illustrated. This factor makes one more wary in interpreting the results of control measures. The proverbial association of dog rabies with hot weather, the so-called "dog days," is not confirmed by these data. If anything, there is a slight negative correlation between temperature and the incidence of the disease in dogs. This conclusion is supported by the experience in Upstate New York for the past 20 years. During this period (1927-1946) the total monthly incidence for January through December, respectively, has been as follows: 269, 268, 341, 330, 338, 295, 212, 163, 141, 173, 179, and 195.

Figure 2 illustrates the geographic distribution of reported cases of rabies in dogs during 1946 and 1947 (through September 24). The remarkable change in the distribution is clearly shown, there being only 13 counties where the disease has been reported at some time during the past 6 months, whereas rabies has been present in 28 counties at some time since January, 1946. Three separate foci are demarcated: a western focus, emanating largely from Buffalo and involving 12 counties; a central focus, which includes most of the rabies reported during the past 6 months; and an eastern focus, centering in Nassau County. Figures 3 and 4, illustrating the distribution of fox and cattle rabies during this same period, show that the disease in these two species is confined almost entirely to the central focus.

Although human rabies has been a rarity in Upstate New York, many

FIGURE 3

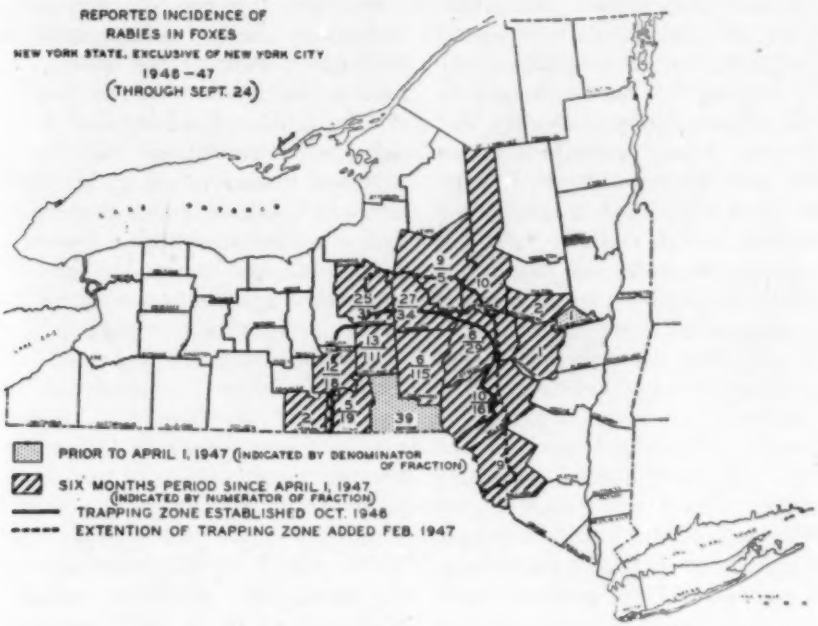
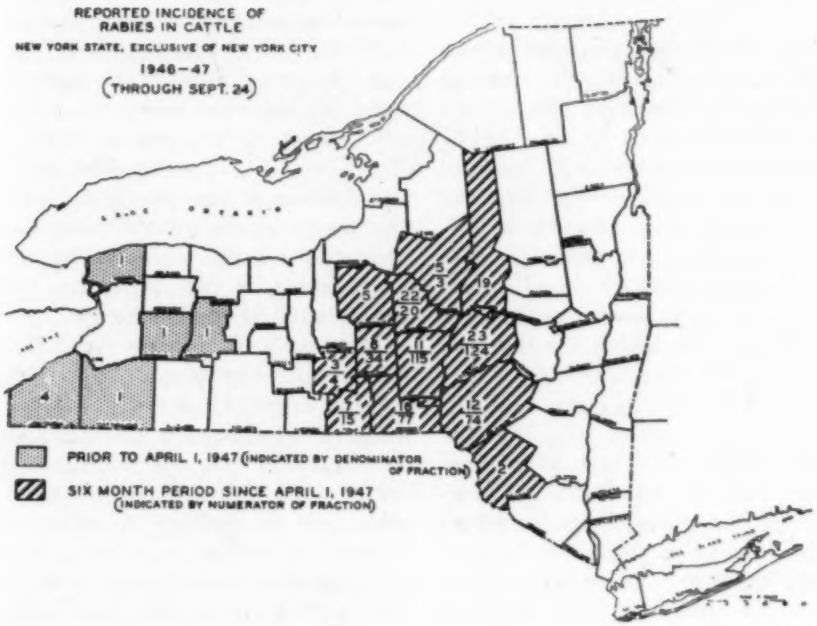

REPORTED INCIDENCE OF
RABIES IN FOXES
NEW YORK STATE, EXCLUSIVE OF NEW YORK CITY
1946–47
(THROUGH SEPT. 24)
PRIOR TO APRIL 1, 1947 (INDICATED BY DENOMINATOR OF FRACTION)
SIX MONTHS PERIOD SINCE APRIL 1, 1947 (INDICATED BY NUMERATOR OF FRACTION)
TRAPPING ZONE ESTABLISHED OCT. 1946
EXTENTION OF TRAPPING ZONE ADDED FEB. 1947

FIGURE 4


REPORTED INCIDENCE OF
RABIES IN CATTLE
NEW YORK STATE, EXCLUSIVE OF NEW YORK CITY
1946–47
(THROUGH SEPT. 24)
PRIOR TO APRIL 1, 1947 (INDICATED BY DENOMINATOR OF FRACTION)
SIX MONTH PERIOD SINCE APRIL 1, 1947 (INDICATED BY NUMERATOR OF FRACTION)

persons have been bitten by known rabid animals. During the 8 year period 1939–1946, 800 individuals were bitten by known rabid animals, of whom 781 received vaccine treatment and none of whom developed rabies. During this same period, 19 individuals were bitten by rabid animals but did not receive vaccine. The 2 cases of human rabies occurring during this period were in the latter group. It would, of course, be inadvisable to place too much reliance on the accuracy of these figures. It is quite possible that the actual number of persons bitten by rabid animals, particularly those not receiving vaccine, is much larger, but these bites have not come to our attention. In evaluating these data, other factors, such as the site and extent of the bite, would have to be considered. During this same period, among the 1,229 persons known to have been in contact with, but not bitten by, proved rabid animals, 890 were given vaccine and 339 were not. No rabies is known to have occurred in any of these persons.

CONTROL MEASURES

Dog

Prior to 1945, efforts to control rabies in Upstate New York were directed primarily toward the dog. The method of attack, as outlined in the Public Health Law and Sanitary Code, involved merely the restriction of the activities of dogs in areas where rabies was certified by the State Commissioner of Health to be present. The usual procedure was to certify a township at a time as rabies appeared within the limits of such towns. In these areas dogs were not allowed at large except on the property of the owner or other individuals with their permission, and except when on leash or confined to an automobile. Muzzling had been considered adequate restriction until the law was amended in 1945 so as to delete reference to this procedure. This was felt advisable since muzzles, for the most part, were inadequately applied, and were almost never found on rabid dogs. With the advent of the Habel[2] rabies vaccine potency test and the demonstration by Johnson[3] of the value of canine antirabies vaccination, the law was amended further to allow the Commissioner of Health to designate areas where rabies exists, in which vaccinated dogs may be allowed to run at large. Rules were devised to insure adequate immunization, designation being withheld until one month after 70 per cent of the enumerated dog population had been vaccinated. Designation in a certified area was to terminate in 12 months unless the immune status of the dog population was maintained. Tompkins County was the first in the state to carry out a county-wide vaccination program.[4] Since that was completed in 1945, a total of 23 additional counties have conducted similar programs. In 12 instances this has been repeated a second year. The experience gained in organizing these projects clearly indicates the importance of utilizing the county rather than the town as the control unit. Under the old practice of certifying towns one at a time, control measures were usually far behind the spreading wave of rabies. Rabid dogs may travel 50 miles in a single day. Hence, in 1947 the law was amended still further to incorporate the idea of the county as the control unit, and to give more specific power to the county government in appropriating money for the control of the disease.

It is believed that the services of a full-time veterinary consultant in rabies control, employed on the state level, are essential to the adequate operation of such a control program. This individual serves to coördinate the plans in all areas and to stimulate local governing bodies into action, as well as to give some measure of uniformity to the practices carried out by individual counties.

Our experience has emphasized the importance of adequate confinement of dogs suspected of having rabies and dogs known to have been bitten by rabid animals. This control measure is difficult to enforce, but its application is worth the best efforts of the responsible agency. It has been repeatedly brought to our attention that the disease can be widely disseminated by a single rabid dog running rampant, even though the dog's owner may have known that it had been previously bitten by a rabid animal and may have made an inadequate attempt to restrict the dog's activities. The New York State Sanitary Code requires the strict confinement of dogs known to have been bitten by rabid animals for 4 months at the owner's expense. One can readily understand the reluctance of dog owners to incur this expense, and, as a result, this represents a weak point in the control program needing further attention. Animals suspected of having rabies are, of course, required to be confined, but since this period lasts only for 7 days, enforcement is not such a difficult problem.

The importance of adequate public education concerning rabies should be reëmphasized. Good public relations are essential to success in control. This goal has been accomplished most readily in our experience by the formation of county rabies advisory councils wherever the problem exists. Such a council has served to give prestige to the program and acts as the responsible local group, answering complaints and stimulating public interest and coöperation. Most councils have included the following: a local health officer, a veterinarian; a representative from the agency responsible for dog control such as the S.P.C.A., dog wardens, city police chiefs, county sheriffs, dog owners, and representatives from the farm organization, the county sportsmen's federation, and the Board of Supervisors of the county.

The difficulty or impossibility of adequately enforcing dog control is well known. Thus, vaccination of the dog population recommends itself as a very practical solution, particularly since the vaccines now available on the market all meet minimal potency standards. Based on the experience gained in the use of this procedure in New York State, it seems important to make clear to all concerned that vaccination is not a cure-all, that failures and occasional untoward reactions may occur. Furthermore, it is important that the dog population be vaccinated within a short time, preferably one month, so that the majority of dogs in the county will reach maximum levels of immunity at the same time, thus creating a more substantial barrier to the spread of rabies. The requirement that at least 70 per cent of the enumerated dog population be immunized before a county may be designated as an area where vaccinated dogs may be allowed at large was derived through trial and error. However, this figure represents the average record readily obtained by most counties, although many were able to vaccinate a much higher percentage of the enumerated dogs.

In each of the 24 counties where programs have been conducted, most of the dog vaccinations have been performed at free clinics, although as a corollary, private vaccination has been stimulated. Usually, all the veterinarians in the county concerned have participated, and clinics have been held in each township on dates and at hours convenient to the dog owners. A card addressed to each owner indicated the appointment schedule. Experience has shown that, in an efficiently organized program, vaccination of as many as two hundred dogs per 2 hour clinic is feasible. Attempts were made to avoid reference to the subject of dog licensing since, in controlling rabies, one wishes to immunize both licensed and unlicensed dogs.

In 1947 a new section was added to the New York State Public Health Law, allowing the compulsory vaccination of all dogs in counties where rabies exists, whenever the county board of supervisors and the State Commissioner of Health both certify to the need for such action. Thus far, two counties have availed themselves of this provision in the law, although no effort at enforcement through legal proceedings was made. In each of these instances voluntary programs had been conducted during the previous year. It has been the policy of the State Health Department to discourage the use of compulsory dog vaccination since voluntary methods have been so uniformly successful and have avoided the antagonism that might be aroused by compulsion.

As a stimulus to local participation in county-wide vaccination programs, state financial aid has been granted for this purpose during the past 2 years. This has amounted to 50 per cent of the total cost of such programs.

The plan for control of rabies on a county basis outlined above has been advocated since 1945 for all counties in Upstate New York in which the disease has occurred. Furthermore, an attempt has been made to create a buffer zone of immunized dogs around the area involved by organizing programs in adjacent counties in anticipation of further spread of the disease. In several counties, because of fox rabies, the vaccination was carried out without the occurrence of any rabies in dogs either before or after the completion of the program.

Based on experience in Upstate New York, it is deemed unnecessary to revaccinate dogs annually except in counties in which rabies exists or in adjacent counties likely to become involved. The disease has a long incubation period, and it is believed that sufficient warning is given by the first discovered rabid animal in a given county to allow for immediate county-wide dog immunization before further significant damage is done. This policy has operated apparently with success for the past two years in Upstate New York.

Results of Dog Vaccination Program

Perhaps the simplest way to evaluate the results of dog vaccination is to study the incidence of rabies before and after the completion of such programs. This has been done in Figure 5, which lists also the number of counties represented in each month's experience. The decline in incidence following completion of the immunization program has been striking. This is even more evident when it is borne in mind that nearly one-half of the rabid dogs discovered in this post-clinic period were reported from three counties where vaccination had not been carried out as completely or as expeditiously as elsewhere. In interpreting these data, one must bear in mind the seasonal swing in the incidence of rabies in dogs, illustrated in Figure 1. Obviously, if all the vaccination programs were carried out at the crest of such a seasonal wave, credit might incorrectly be allocated to vaccination. Actually, this was not the case since individual county programs were completed at various times of the year, and Figure 5 represents a consolidation of this experience. The actual dates for completion of the 24 county vaccination programs are as follows:

	1945	*1946*	*1947*
Jan.	..	2	1
Feb.	..	..	..
Mar.	..	..	..
Apr.	..	3	..
May	..	3	1
June	1	2	1
July	..	1	2
Aug.	..	1	1
Sept.	..	1	1
Oct.	1	1	..
Nov.	..	1	..
Dec.	..	..	..

The extended period of observation

FIGURE 5

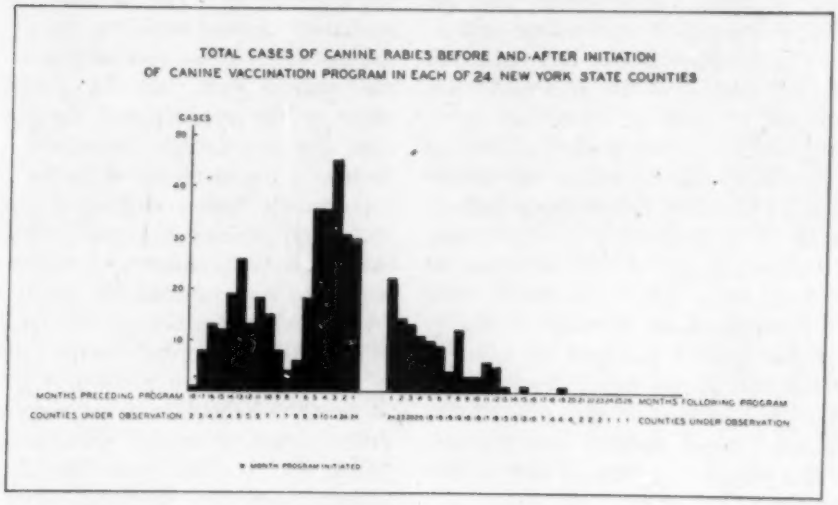
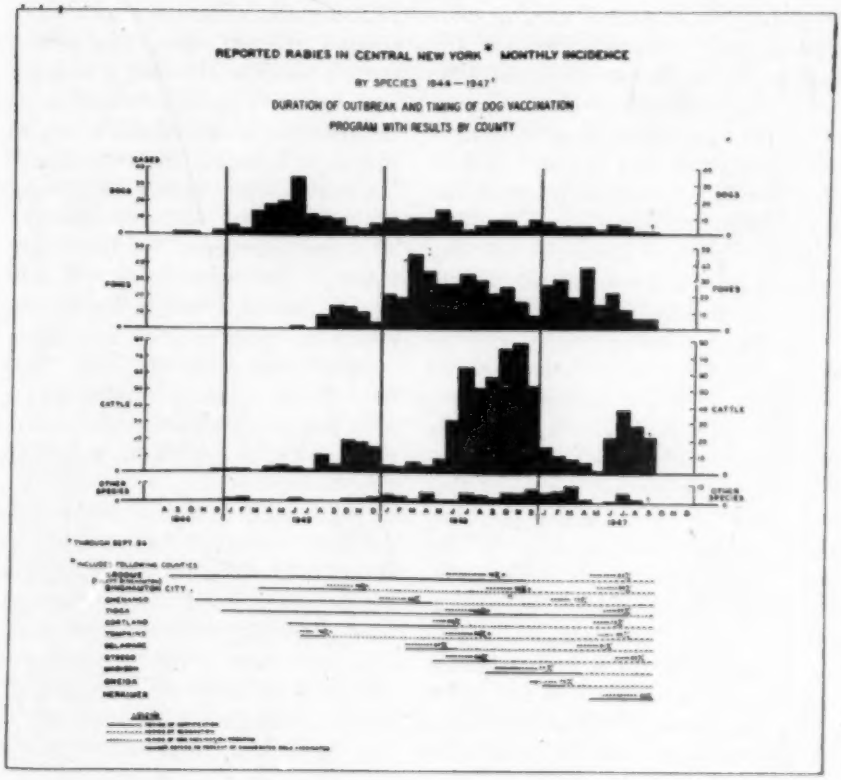

TOTAL CASES OF CANINE RABIES BEFORE AND AFTER INITIATION
OF CANINE VACCINATION PROGRAM IN EACH OF 24 NEW YORK STATE COUNTIES
CASES
MONTHS PRECEDING PROGRAM
MONTHS FOLLOWING PROGRAM
COUNTIES UNDER OBSERVATION
COUNTIES UNDER OBSERVATION
* MONTH PROGRAM INITIATED

FIGURE 6



after completion of these programs tends further to refute the possibility that the decline was primarily seasonal in nature, since no subsequent rise has occurred. In a large portion of this area rabies has continued to exist in foxes and cattle during the post-clinic period, indicating the possibility of exposure of dogs to the disease. Of course, this analysis fails to indicate to what extent dog control may have played a part in the reduction of reported canine rabies. However, since most of the counties involved are highly rural, and since it has been the practice to allow vaccinated dogs to run at large following completion of each county program, it seems unlikely that dog control has played a significant part in this reduction.

The central New York focus, comprising ten counties, in which rabies has continued to exist to some extent in dogs, and more strikingly in foxes and cattle, following completion of the vaccination programs, would seem to offer the most ideal circumstances for the evaluation of the efficacy of canine vaccination. With one exception, well over 70 per cent of the enumerated dogs have been vaccinated in each county. In 7 of these a second vaccination program has been completed one year after the first, so that the immune status of the dog population has been maintained. Figure 6 illustrates the incidence of rabies in this area by species of animal and by month since 1944. At the bottom of the figure are listed the counties which make up the area. The solid line opposite the name of the county indicates the duration of the existence of rabies in that county. At the point where this line becomes broken, designation of the county took place, after which vaccinated dogs were allowed to run at large. For practical purposes this means that all dogs have run at large, since at present we lack a means of readily differentiating vaccinated from non-vaccinated dogs without going to the trouble of capturing the animal and looking for a vaccination tag. The dotted line immediately above indicates the period during which mass vaccination of dogs was carried out, and the percentage refers to the proportion of the enumerated dog population vaccinated. The decline in the incidence of canine rabies concomitant with a striking rise in fox and cattle rabies is apparent. Since fox rabies is notably under-reported, we have reason to suppose that the exposure of dogs to rabies has been a distinct possibility. Although rabid cattle probably do not represent a menace to dogs, they do serve as indicators of the presence of rabies infection in the area, probably in the fox. We feel, therefore, that the immunity of the vaccinated dogs has been effectively challenged.

An attempt has been made to compare the rabies attack rate in vaccinated and non-vaccinated dog populations in this area, where at least 60,647 of the 77,758 enumerated dogs have been vaccinated at least once. No estimate of the turnover in the dog population has been included in this evaluation. Annual enumeration is carried out by each township as a basis for the enforcing of dog licensure. The enumerated population has remained remarkably constant over a period of years, so that one may assume that dogs dying naturally or being destroyed are being replaced at about an equal rate by new dogs, presumably unvaccinated. Very little dog destruction takes place in this entire area, which includes only two major cities with a combined population of 15,000 dogs.

Vaccination failures have been defined as those cases of rabies occurring in dogs 1–18 months after vaccination. During the period of observation since one month after the completion of each of these county programs, a total of 15 such failures has been discovered. The interval in months between last vaccination and death from rabies was as follows:

Number in Months	*Number of Cases*
1	1
2	1 *
4	3
6	1
7	3
8	1
10	1
11	1 †
12	3

* Vaccinated a few days after bitten by rabid fox
† Also vaccinated 1 month prior to death from rabies

Each failure was studied with care, and no obvious explanation, other than the inadequacy of immunity in the dog, was discovered. Since exact data as to the type of vaccine used and the lot number involved are not at hand for the 60,647 vaccinated dogs, it cannot be clearly indicated that any one brand or lot was unduly selected by these failures. Vaccine from at least three different manufacturers had been used in the vaccination failures. The general practice has been to give each dog only one injection of 5 ml. of vaccine.

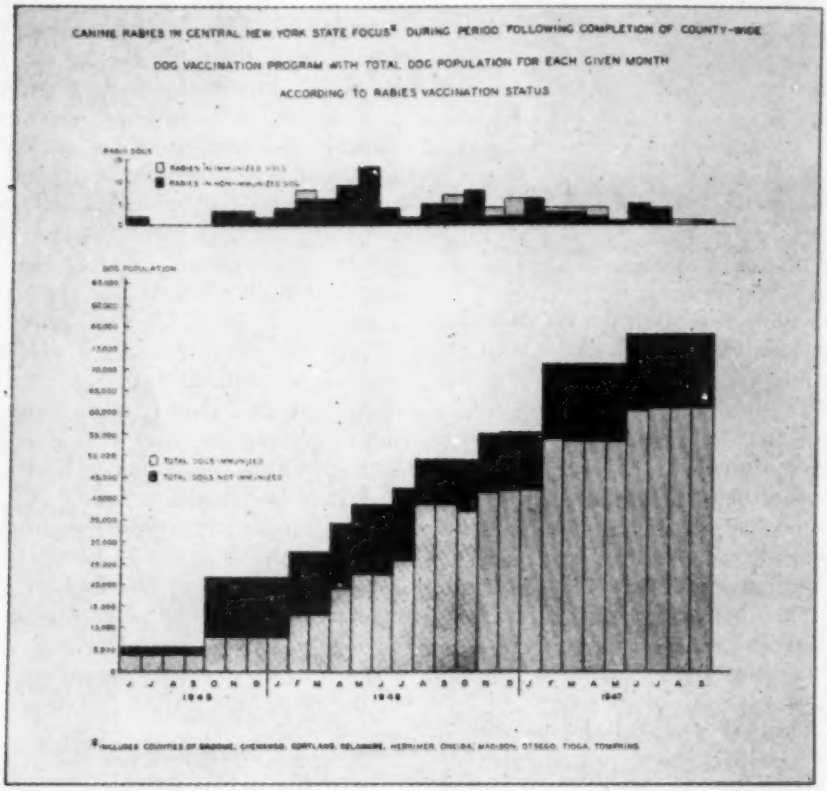
A total of 867,603 dog-months of experience has been accumulated by vaccinated dogs during the period since one month after the completion of each county vaccination program. Thus, the attack rate in presumably protected animals has been 1.7 per 100,000 dog-months. On the other hand, 101 rabid dogs have been reported during the same period in the same area in 368,614 dog-months of experience in non-vaccinated dogs, or a rate of 27.4 per 100,000 dog-months. Thus, the attack rate in non-vaccinated dogs was 15.8 times that in vaccinated dogs. In making these estimates, it might be fair to eliminate from consideration the 2 dogs which developed rabies one and two months after vaccination, since they presumably were in the incubation period of the disease at the time of vaccination.

In order to minimize the possibility that the dog population was grossly under-enumerated, thus tending to reduce the attack rate in non-vaccinated dogs, the same analysis was made using licensed dogs only. This procedure does not significantly alter the figures, the attack rate in non-vaccinated dogs being 13.5 times that in the vaccinated. (Twelve unidentified and 3 additional unlicensed dogs occurred among the 101 cases of rabies in unvaccinated dogs, and all of the dogs listed as vaccination failures were licensed. Ninety-four per cent of the enumerated dog population in this area is licensed.) The significance of this difference in rates is enhanced when it is realized that the data include, for the most part, records of clinic vaccinations only. It is estimated that approximately 10 per cent in addition were vaccinated privately.

The difference in attack rate presented for the central focus is in keeping with that reported for the Birmingham, Ala., experience,[5] where the rabies attack rate among non-immunized dogs was eight times that in the immunized observed in the same area during the same time period.

This type of analysis can be extended to include the other 14 counties in Upstate New York where dog vaccination programs have been carried out. However, this serves little purpose since the records on vaccination in many of these counties are not nearly as adequate and since in a large portion of this area rabies failed to occur at all following completion of the vaccination program, thus making it unlikely that the immunity of vaccinated dogs was adequately challenged. A total of 92,821 dogs have been vaccinated in these areas over the past 18 months, and in 5 counties re-vaccination programs have been carried out. Only 37 cases of canine rabies have occurred during the period since completion of these programs, and 35 of these have appeared in 3 counties where vaccination was rather inadequately carried out and where records are incomplete. It should

FIGURE 7


CANINE RABIES IN CENTRAL NEW YORK STATE FOCUS* DURING PERIOD FOLLOWING COMPLETION OF COUNTY-WIDE
DOG VACCINATION PROGRAM WITH TOTAL DOG POPULATION FOR EACH GIVEN MONTH
ACCORDING TO RABIES VACCINATION STATUS
RABID DOGS
DOG POPULATION
TOTAL DOGS IMMUNIZED
TOTAL DOGS NOT IMMUNIZED
J J A S O N D J F M A M J J A S O N D J F M A M J J A S
1946
1946
1947

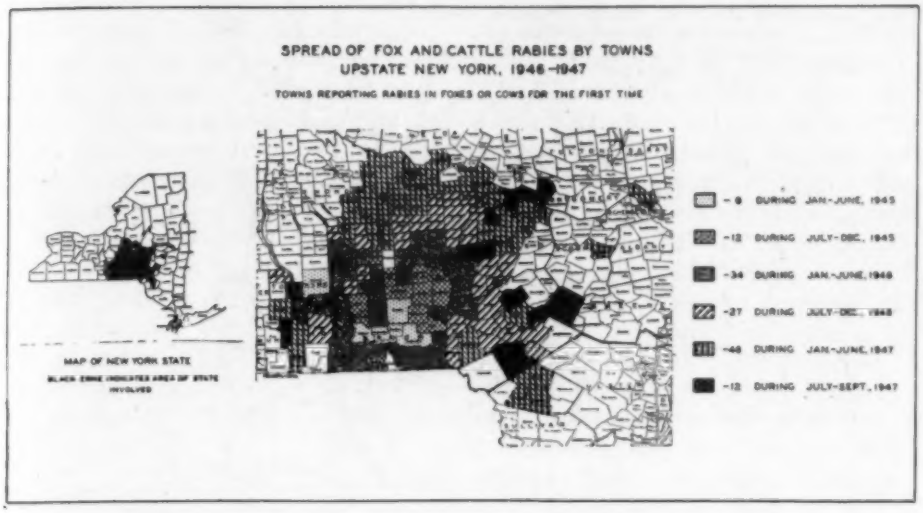
be said, however, that in one of these counties 5 clear-cut vaccination failures occurred among the 20 rabid dogs dying during the period since completion of the program. The percentage of the enumerated dogs vaccinated in this county is not accurately known since private vaccinations were widely practised and complete records of these are not available. A single brand of vaccine was used in this county, but the same brand was used widely elsewhere and it seems unlikely that the apparent discrepancy is explained on the basis of impotent vaccine.

The findings in the central focus with respect to the occurrence of rabies in vaccinated and non-vaccinated dog populations are presented graphically in Figure 7. One month after completion of the vaccination program in any given county the dog population was added to the graph, non-immunized dogs being indicated in black and immunized dogs by cross-hatching. The upper portion of the figure presents the discovered cases of canine rabies in the area during the period under consideration and distinguished as to the immunity status of the dog. The striking concentration of rabies in the relatively small non-immunized dog population is apparent.

Fox and Cattle Rabies

The first known rabid fox in New York State was reported in 1941 from Chenango County. This was followed in 1943 by another single isolated case of fox rabies in the adjacent county of Otsego. In retrospect, one wonders

FIGURE 8


SPREAD OF FOX AND CATTLE RABIES BY TOWNS
UPSTATE NEW YORK, 1946-1947
TOWNS REPORTING RABIES IN FOXES OR COWS FOR THE FIRST TIME
MAP OF NEW YORK STATE
- 9 DURING JAN.-JUNE, 1945
- 12 DURING JULY-DEC., 1945
- 34 DURING JAN.-JUNE, 1946
- 27 DURING JULY-DEC., 1946
- 46 DURING JAN.-JUNE, 1947
- 12 DURING JULY-SEPT., 1947

whether the disease has not been present in foxes continuously since that time because it is in this very area that the recent extensive fox epizoötic has occurred. In 1944 a localized outbreak of 15 rabid foxes occurred in Chautauqua County, at the extreme western tip of the state. This was associated with the occurrence of rabies in 40 cows in the same county during that year. Based on the knowledge we now have concerning the interrelationship of the disease in these two species, it seems likely that the foxes gave rise to these cases in cows. During mid-1945 the disease appeared in foxes and cows in southern Chenango County and has progressed radially from that point until the present time. There have been scattered cases involving other domestic animals and other wildlife, but these are apparently of secondary importance.

The only index available of the incidence of fox rabies is the number of heads submitted to the laboratory for examination and found to be infected with rabies virus. This is a rather poor index since it depends on the extent of interest shown in submitting heads to the laboratory by farmers, trappers, veterinarians and others in the areas involved. There is ample evidence to indicate that the disease is markedly under-reported in this species, since rumors referring to crazy-acting foxes and foxes found dead are commonplace. To a large extent, the only fox heads submitted for examination are those in which the animal bit a human being and the parties concerned have been anxious to determine specifically whether the animal had rabies so as to be guided in the therapy of the patient. Actually 70 per cent of the fox heads submitted are found to be positive for rabies. Accurate data are not available concerning the relative frequency of rabies in red versus gray foxes. For that matter, little is known about the actual population of such foxes in the state, although both varieties are widely spread throughout New York State, varying in their relative preponderance depending on the terrain which best suits the specific habits of the animals. Foxes go through periodic cycles of population increase and decrease. These are said to occur approximately every 7 years and New York State is currently experiencing the peak of such a cycle. This may be in-

FIGURE 9

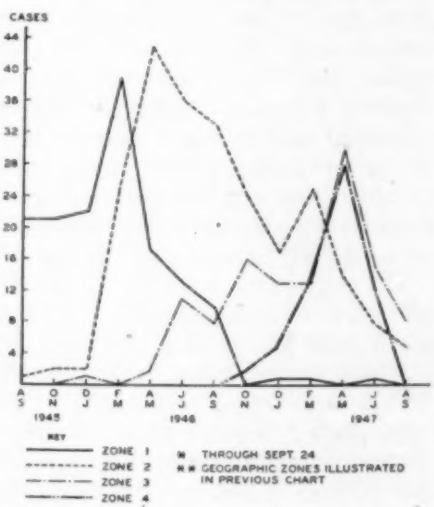
GEOGRAPHIC ZONES USED IN STUDY OF RADIAL SPREAD OF RABIES IN FOXES AND CATTLE
NEW YORK STATE, EXCLUSIVE OF NEW YORK CITY
1946 – 47
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1

directly one of the precipitating causes that have accounted for the widespread involvement of foxes by rabies. A rather marked seasonal variation in the rapidity of spread has occurred during the past two years, as is illustrated in Figure 8, which also shows the radial expansion of the problem in foxes and cattle. Thus 34 townships were first involved during the first 6 months of 1946, followed by only 27 during the second 6 months of that year. Similarly, in 1947, 46 new townships were involved during the first 6 months, followed by only 12 thus far during the latter half of the year.

The phenomenon of radial spread is more clearly demonstrated in Figures 9, 10, and 11. Using the township in which fox and cattle rabies first appeared as a center for the focus, concentric circles have been made at 15 mile intervals, thus creating five zones, illustrated in Figure 9. In Figure 10 the reported bi-monthly incidence of fox rabies by zone is presented. The wave-like progression of the disease in this species is demonstrated, with apparent elimination of rabies in Zone 1 as it continues to exist in Zone 2. In

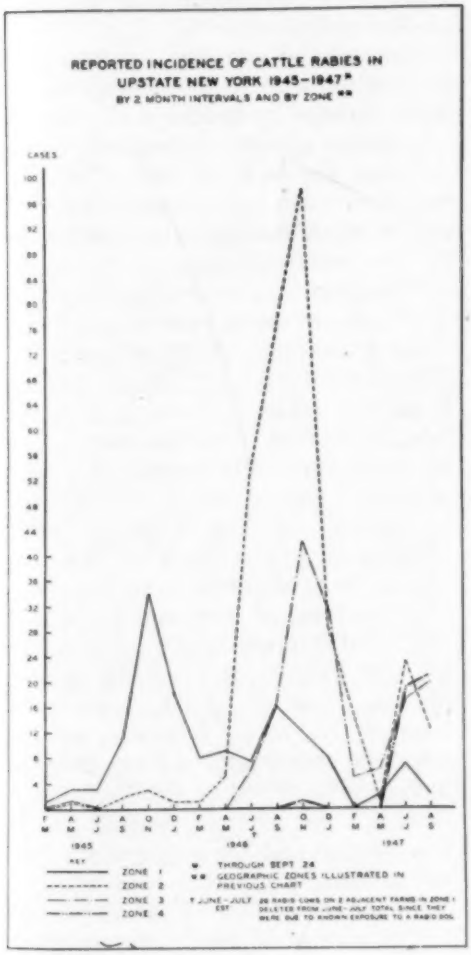
FIGURE 10

REPORTED INCIDENCE OF FOX RABIES IN UPSTATE NEW YORK 1945–1947*
BY 2 MONTH INTERVALS AND BY ZONE**



turn, there is a reduction of the disease in Zone 2 as it appears and reaches a peak in Zone 3. Fox rabies appeared later still in Zone 4; however, the peak coincides with that of Zone 3. In interpreting these data, one must bear in mind the seasonal variation of the disease in foxes and the likelihood that the size of the fox population increases in each successive zone since the area involved is greater. In addition, the fox trapping program described below may have tended to impede the natural rate of spread. Furthermore, in the outer zones a sizeable portion of the area extends into the State of Pennsylvania. Although it is known that fox rabies exists in this northern portion of Pennsylvania, accurate data as to the extent of incidence are not available.

FIGURE 11



In Figure 11 the same sort of information is presented for cattle rabies. The pattern of spread is essentially the same as in foxes, but more irregular. The disproportionate rise in incidence in Zone 2 is explained partly by the larger cow population in that zone. Using the population of cows and heifers 2 years of age and over, determined by census in 1945,[6] the populations by Zone are as follows: Zone 1—40,837; Zone 2—97,678; Zone 3—127,722; and Zone 4—148,859. Thus, it is possible to reconstruct Figure 11 using bi-monthly rabies attack rates in cows and heifers instead of the number of cases. Using this procedure, the peak in Zone 1 is found to be 75.8 cases of rabies per 100,000 population and in Zone 2, only 96.3 per 100,000 population, not remarkably higher. To some extent, however, the seasonal variation in the incidence of cattle rabies has influenced this analysis. Although not demonstrated in these charts, Zone 5 contributed two foxes in the period April-May, 1947, and three cows during August-September, 1947. Thus, the radial spread continues.

The problem of controlling the disease in these species is not easy. With respect to the fox, diverse interests have made the problem unusually difficult. For example, the farm group is anxious to get rid of the fox because of damage to poultry; on the other hand, the fox trappers, a powerful group in New York State, want a large fox population, both for trapping and for sale of pelts. Game bird hunters, however, would be happy if all foxes were dead. In approaching this problem, joint consultation has been essential between the state departments involved, Health, Conservation, and Agriculture and Markets. The disease in the cow has been primarily an economic

problem since the cow represents a financial investment and, to a negligible extent, a hazard in transmission of the disease. For some time, farmers were indemnified for cattle losses due to rabies through the use of dog license moneys, under the supposition that the damage was due to dogs. With the continued absence of dog rabies in this area and the obvious association of the disease in foxes and cows, special funds were made available through legislation to handle this problem. A maximum indemnity of $250 for each pure bred cow is allowed. Thus, in 1946 over $100,000 was paid out for this purpose, which gives some estimate of the size of the economic problem directly attributable to the existence of the disease in foxes. Furthermore, foxes frequently bite human beings, thus subjecting them to the hazard of rabies. They are also instrumental in keeping alive the infection in a small portion of the dog population and make it essential that annual re-vaccination of dogs in the area be carried out. There is every reason to suppose that had fox rabies not existed in New York State, the control program for dogs would by now have successfully eliminated the disease from the state.

Control of fox rabies in New York State is limited by the fact that poisoning techniques are prohibited by law. These procedures are not species-specific so that the likelihood of poisoning other animals is a real danger. The use of a fox bounty is strongly discouraged, since this has been found of little value in this state and others, and is a wasteful expenditure of money. Attempts were made first to stimulate farmers and other groups to trap foxes and to inform the conservation authorities of fox dens. These preliminary efforts at control were not attended by success. However, a more satisfactory control program was initiated in October, 1946, by the New York State Conservation Department and has been in operation continuously since that time. The plan is based on the assumption that foxes, even though rabid, do not travel far. This would seem to be borne out by the relatively slow progressive radial spread of the disease in this species. It was hoped that the establishment of a zone of scarcity around the infected area might serve to prevent the spread of rabies among foxes in the same manner as does a fire lane cut through the forest in advance of an approaching forest fire. It would thus allow the disease to die out spontaneously within the infected area, where the indiscriminate trapping of foxes hardly seemed feasible and was of doubtful value.

The zone of scarcity, as originally established, involved the placing of trap lines, manned by professional trappers of proven ability, completely surrounding the infected area. The zone was five miles wide and seemed to operate with success until a break in the line was established to the north, necessitating the creation of a new line of defense in February and March, 1947. The original zone and this extension are illustrated in Figure 3, which, because it pictures rabies by county, gives the false impression that the disease has occurred extensively outside the zone. Actually, however, this is not so, since the cases of fox rabies have practically all occurred within the zone. More recently the zone of scarcity has been broadened to ten miles in width, and additional trappers have been added to the staff. During the first ten months of this program, 2,011 foxes were trapped. The object, of course, was not merely to trap a large number of foxes, but actually to reduce the fox population in the zone of scarcity to a minimum so that transmission of rabies across this zone would be unlikely. Trapping of the first 25 per cent of the fox population is readily accomplished,

but as foxes become less plentiful and wiser, trapping is less successful. Nevertheless, these trap lines have been rigorously maintained. At the present time, adequate evaluation of this control procedure is not possible. With the apparent continued gradual radial spread of fox rabies, one is inclined to be pessimistic as to its value, although the decline now occurring in reported fox rabies, if not purely seasonal in nature, may indicate a certain degree of success.

The control of cattle rabies is primarily a problem of controlling the disease in foxes. Vaccination of cattle has been practised to some extent, but experience has been too limited to allow evaluation. Furthermore, this procedure, if carried out over a wide area, would be prohibitive in cost. It would seem more logical merely to insure cattle against possible death from rabies. Of course, if it were possible to protect the animals adequately against fox bites, the problem in cows would be solved.

SUMMARY AND CONCLUSIONS

1. The problem of rabies in New York State has been described, showing the introduction and spread of the disease in foxes and cattle with a concomitant sharp decline in canine rabies. Thus, during 1946 rabies was reported in 377 dogs, 308 foxes, and 440 cows, while during the first nine months of 1947, the disease was reported in only 40 dogs, but in 218 foxes and 173 cows.

2. Evidence has been presented indicating the value of prophylactic canine antirabies vaccination. In 10 counties where 78 per cent of the enumerated dogs were vaccinated, the rabies attack rate in non-vaccinated dogs, following completion of the program, was 15.8 times the rate in vaccinated dogs observed during the same period of time and in the same area.

3. Based on experience gained in sponsoring 24 county control programs, the following general recommendations have been presented:

a. It is felt that mass dog vaccination is a valuable adjunct to dog control though it is essential that both techniques be used.

b. It is suggested that these measures preferably be applied over an area which is at least county-wide. Annual re-vaccination of the dogs in a given county is probably necessary only if rabies continues to exist within the limits of this or adjacent counties.

c. Such control measures should be initiated in advance of the introduction of the disease, when cases are occurring in adjacent counties.

d. The importance of an educational program to implement application of control measures should be emphasized.

e. A well qualified person employed on the state level to promote and supervise the control program is essential.

f. State financial aid to counties for the conducting of dog vaccination clinics has been of great help in New York State.

g. The placing of local authority in the hands of a county rabies advisory committee made up of representatives of all groups concerned with the problem is deemed wise.

h. Emphasis should be placed on the benefits to be derived by the individual dog and his owner from the program, rather than on the legal necessity of complying with the regulations or laws that may apply.

4. In the New York State experience, rabies in cattle seems clearly to have been due to the bites of rabid foxes.

5. Fox rabies, and as corollary, cattle rabies, has spread in a slow radial fashion over a 2 year period.

6. Control of the fox problem has been attempted by the creation, through trapping, of a zone of fox scarcity surrounding the infected area. Adequate evaluation of this procedure is not as yet possible.

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Death, Defect, and Disability in Prenatal Life*

An Epidemiologic Consideration

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THAT developmental defects represent something more than unavoidable accidents of nature, that collectively they constitute a problem of grouped populations of concern to the public health, has been a concept of slow evolution. Yet each step that marked progress in thought and interpretation passed along the familiar path that led to a clearer understanding of other problems of community interest, from those of the communicable diseases, through accidents and injuries, to the more recently developed concern about malignant diseases. The steps, in succession, are the collection and description, the grouping and classification, and finally the correlation and interpretation of naturally occurring phenomena.

Initial interest in congenital anomalies was clinical and the first results of this interest were manifest as far back as the 16th century, with a great collection of case reports describing the bizarre and unusual rather than the commonly observed abnormality; the bigger the monster the more suitable a subject—the aim, so to speak, being the exhibition of the most prodigious catch of the season. The next development was evident more than two hundred years ago in attempts at classification on purely morphologic grounds. Early efforts such as those of Buffon[1] were concerned largely with the groupings of freaks—dwarfs and giants, two-headed babies, siren-like creatures with a single fused leg, three-legged men, hermaphrodites and all the rest.

Attempts at etiologic interpretation came with application of the scientific method. In the early part of the 19th century Isadore St. Hilaire[2] observed that a greater number of abnormalities and defects resulted when hen eggs were incubated artifically than under natural conditions. He discovered that similar anomalies could be produced if the embryonating eggs were shaken more or less violently, or partially coated with wax or varnish, thus rendering them relatively impermeable to air. Geoffrey St. Hilaire,[3] the son, pursued his father's interest and it remained for him to found the science of teratology and christen it with its name derived from the Greek word meaning monster. He assembled the first definitive collection of clinical cases giving facts about the mother as well as the child. He improved on previous classifications and formulated laws by statistical analysis of his material—proving, for example, that conjoined monsters, like the Siamese twins, were always of the same sex. He was fully cognizant that further advances of medicine were necessary be-

* Presented before the Epidemiology Section of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 10, 1947.

fore investigators could cope with factors of etiology—but he clearly defined the nature of the problem which confronted them: "If . . . anomalous beings are created . . . according to natural laws; if their deviations are the effects of disturbances and adverse influences happening during the course of development; if their causes are only accidental —and of this there can no longer be any doubt—another subject for research presents itself, a subject important, immense and capital: the determination of causes."

Epidemiologists gave little attention to the field until Gregg's observation [4] in 1941 that rubella during early pregnancy may result in congenital deformity of the child. That such a simple etiologic relationship had escaped recognition for generations seems almost unbelievable to some who have postulated that a change in virulence of the virus of rubella accounts for the supposedly new phenomenon; yet the history of medicine is replete with discoveries that in retrospect seem obvious. Rubella itself was confused with measles until about a century ago. During the years that followed, the criteria for likeness or difference among infectious diseases became biological; among congenital malformations they have remained anachronistically clinical. The reason was that biological information remained lacking except in regard to syphilis and certain hereditary diseases.

FREQUENCY DISTRIBUTIONS OF PRENATAL DEATHS

As a cause of death in the United States the rate from congenital malformations was 12.6 per 100,000 population in 1944. The importance of this group to the public health is indicated by its rank of tenth among the principal causes of death for all age groups. They rated third for deaths among

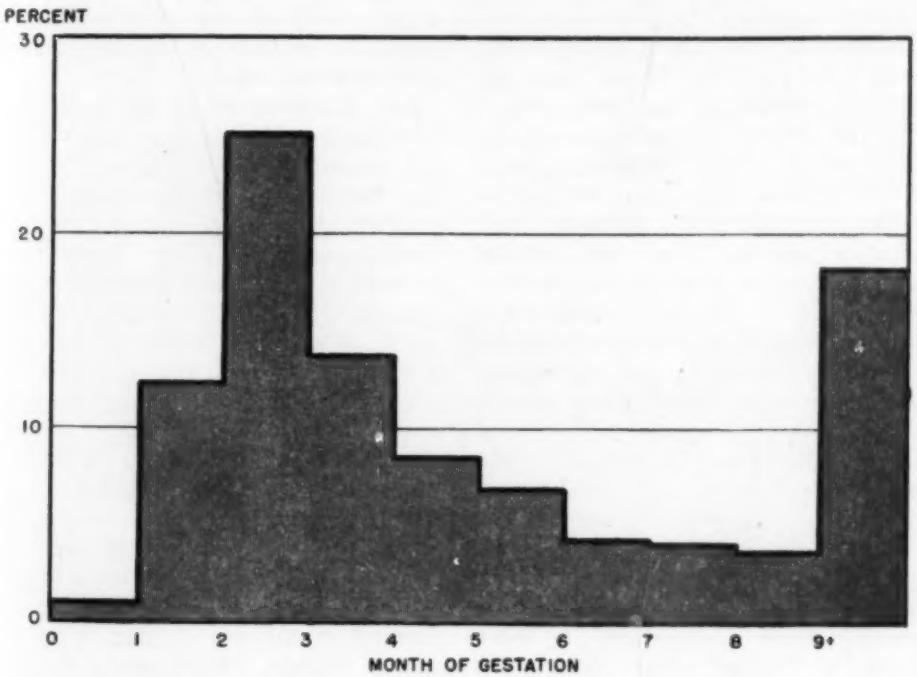

FIGURE 1—Per cent Distribution of 9,932 Prenatal Deaths, New York City, 1944, by Month of Gestation.[8]

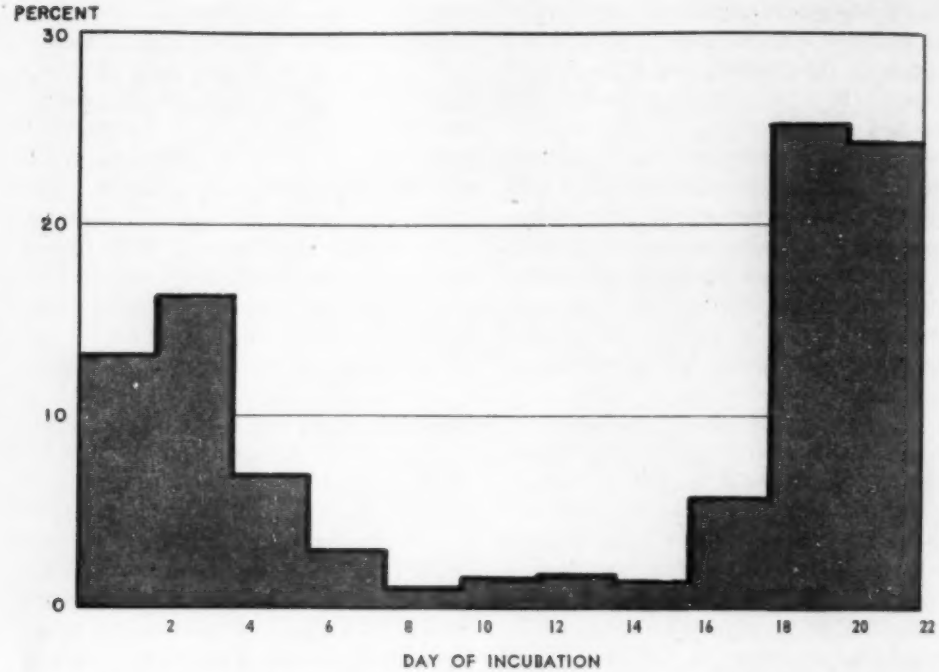

FIGURE 2—Per cent Distribution of 891 Embryonic Deaths of White Leghorn Chicks, by Days of Incubation.[9]

infants under one year of age, the ratio being 553.7 per 100,000 and surpassed only by prematurity and pneumonia.[5]

Death rates give no indication of loss to the human race by virtue of crippling, or anomalous conditions causing or related to stillbirths and abortions. Mall, after a lifetime study of prenatal pathology, came to the conclusion that about "80 of 100 pregnancies terminate in the birth of normal individuals; seven are aborted as pathological ova containing radical changes within them and about one produces a monster at term. The remaining twelve fetuses and embryos are by no means all normal for we are constantly finding in them, especially the younger specimens, minor changes which must be viewed as the forerunners to real monsters."[6] Supporting these observations is MacGregor's finding[7] that death was attributable to developmental defects in 20.2 per cent of a series of 435 stillbirths, and in 10.5 per cent of a series of 618 neonatal deaths.

Any discussion of factors governing fetal death and deformity must take into account definite biologic evidence that the fetus is more vulnerable to adversity at certain periods of its development than at others. Some ten thousand prenatal deaths reported from New York City in 1944,[8] arranged by month of gestation when the product of conception was passed, show a biphasic distribution (Figure 1). The frequencies characterizing the first two months of pregnancy are doubtless materially less than fact, in that many instances remain unrecognized, and reporting of those that are apparent is generally less complete than at later periods. The biphasic distribution of prenatal deaths has a counterpart in animal biology. Bronkhorst's studies of chick mortality[9] reveal a similar distribution (Figure 2) with a concen-

tration of deaths at the initial period of most rapid growth and differentiation, and another toward the end of gestation when the chick must prove robust enough to escape from the shell.

The biphasic vulnerability of the pregnant host is evidenced by observations made on women who contracted pandemic influenza in 1918. Harris[10] analyzed the outcome of 1,350 pregnancies complicated by influenza and found that pregnancy was interrupted in 36 per cent prior to the 9th month of gestation. The rates of interruption by month of pregnancy are shown in Figure 3. Mortality figures for the infant are not given, but some indication of overall mortality is gained by Bland's study[11] of influenza in pregnancy. He followed the outcome of 120 pregnant women contracting influenza during the 1918 epidemic. Almost half of the mothers died; the 66 who lived produced 24 living infants, essentially two-thirds having lost their babies as abortions, stillbirths, or neonatal deaths. Other diseases shown to play an important part in prenatal death are measles,[12] German measles,[13, 14] smallpox,[15] syphilis,[16] and typhoid fever.[17]

Though death of the child results rather frequently from agents acting during gestation, the evidence shows the risk to be relative. What of the babies who survive and what of the possibility that they experience congenital effects of disease? An epidemiologic approach to these questions is favored by the accumulated knowledge of genetics, embryology, and clinical medicine. As a point of departure, it may be taken as reasonably well established that two main types of congenital deformities exist—the hereditary and the acquired—and furthermore that differentiation of the two by morphologic criteria is accomplished with more difficulty than is ordinarily appreciated.

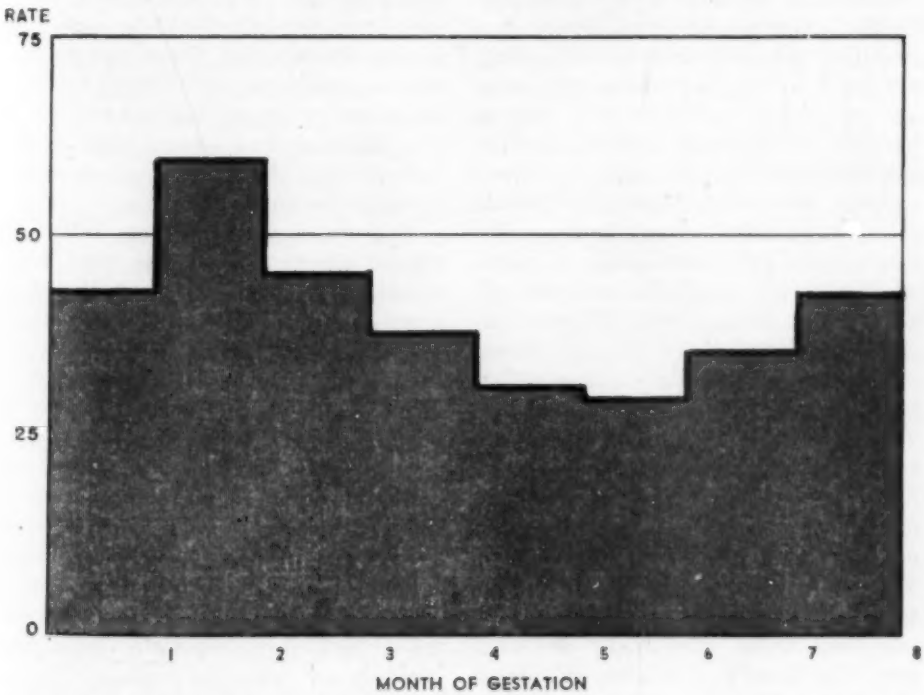

FIGURE 3—Prematurely Terminated Pregnancy after Pandemic Influenza, 1918. Incidence per 100 Cases by Month of Gestation.[10]

GENETICS

Congenital physical traits when dominantly inherited offer little opportunity for confusion with acquired deformities, only because they occur in significant numbers within the family and its forebears. Recessive traits of man cannot, however, be differentiated by these criteria—which are in essence epidemiologic—in the absence of a comprehensive family genealogy. Since the inherited anomaly is related to chromosomal patterns, and the acquired anomaly to the stage of development at which it originated, the possibility is evident that the two kinds of deformities might be separated on the basis of differing clinical patterns. To date such criteria for differentiation have not been established.

That both genetic and acquired factors are necessary for the production of some diseases is illustrated by erythroblastosis. Without a peculiar host constitution inherited from father and mother, the fetus does not develop this condition. Nevertheless, hereditary factors are not of themselves the sole cause, for erythroblastosis occurs in only a fraction of infants with that inherited predisposition.[18] An inciting factor, namely the entrance of incompatible erythrocytes into the maternal circulation to produce immunization, is essential.[19] Better diagnostic methods are necessary to an improved and quantitative determination of the individual significance of hereditary and acquired factors in the causation of anomalies. The problems arising from the atomic bombing of Hiroshima and Nagasaki illustrate the difficulty in attempting to group human anomalies according to origin as either hereditary or acquired. The speculation has been made that mutations, similar biologically to those produced in the fruit-fly by Muller,[20] may take place as an aftermath of that experience. Should anomalies be observed in significant numbers within the immediate future, those occurring among infants of mothers pregnant at the time of the event would clearly represent acquired anomalies; those of future pregnancies present an impossible decision between nontransmissible injuries and transmissible injuries—mutations—of the parental germ plasm. Only through observation of future generations could the nature and frequency of possible mutations be satisfactorily settled.

EXPERIMENTAL EMBRYOLOGY

Clinical knowledge of the causes of acquired anomalies of man—except for those of syphilitic origin—is of recent development and limited extent. Some of the acquired defects of animals will be considered briefly for they have long been the subject of experimentation.

About 200 years ago Jacobi [2] published observations on naturally occurring monstrosities of trout and salmon, indicating that they were related to the environmental milieu of the eggs. It is now known that trout and similar fish dependent on high oxygen tensions in cold water for survival suffer decimation and monstrous development of the embryo when high temperatures cause lowered oxygen tensions.[21]

The experiments of the elder St. Hilaire 125 years ago have been mentioned. During the century that followed numerous workers contributed to this field of experimental embryology; particularly Stockard in 1908, who demonstrated that cyclopean fish could be produced by subjecting embryos to appropriate strengths of various anesthetics such as chlorobutinal, ether, chloroform, and alcohol.[22] Each of these agents caused the cyclopean defect when acting at a critical stage of development —about the 14th hour of life when the optic vesicles differentiate from the brain.

Stockard concluded that analogous phenomena were the cause of human

monstrosities, but he was unable to prove the point, despite intensive studies on the effects of alcoholism in pregnancy.[23] His work was received with the attention it deserved, but the gap between the experimentally produced phenomenon and that occurring naturally remained open. Gregg's observation in 1941 that rubella in the mother frequently leads to deformity of the unborn child remedied that deficiency. More important, it showed the way to a systematic exploration of a new field by correlated epidemiologic, clinical, and embryologic studies.

CLINICAL EMBRYOLOGY

Accumulated embryologic knowledge is so precise that the stage of development at which many deformities come into being can be determined with reasonable certainty. Thus, congenital cataract of the central or nuclear type [24] and certain congenital heart diseases such as interventricular septal defects [25] represent defective development in the first trimester of pregnancy. In clinical appearance these two conditions are so dissimilar that the possibility of their being different morphologic manifestations of a common biologic process scarcely seemed reasonable. Yet the anomalies observed as an after effect of rubella proved that such diverse organs as the heart, brain, eye, tooth, and ear may be deformed by the action of a single agent at a critical period of development.

STATUS OF PRESENT EPIDEMIOLOGIC KNOWLEDGE

A correlation has been established between the trimester in which maternal rubella occurred, and the trimeter in which active differentiation of the affected organs was taking place.[26] It has also been established that the result of this impact is variable; an anomaly may follow, the fetus may die, or it may escape manifest sequelae of rubella.[13, 14] The inference is that morphologic classification of congenital malformations, though of crucial importance to clinical treatment and prognosis, has no intrinsic biologic significance. The important epidemiologic principle is that a single agent may give rise to multiple defects when acting at a specific stage of prenatal differentiation.

The syndrome of mongolism is an example of a deviation from normal development initiated at about the 8th week of fetal life.[27] The proof rests on embryologic evidence that mongoloid defects occur in organs and tissues undergoing active differentiation at that period. The site and nature of associated defects were found to be highly variable; and this was interpreted as evidence that mongolism, though a recognized clinical entity, was merely part of a larger biologic phenomenon. A significant association was demonstrated between mongolism and maternal disease—mechanical disorders of the uterus, threatened abortion manifested by hemorrhage and intercurrent infections. That such maternal factors were causally connected with disease in the child was indicated by evidence of activity of disease in the first trimester where pregnancy resulted in a mongoloid baby. A second principle thus emerged, that a specific type of arrest may be caused by different agents acting at a particular stage of development.

The general implication of both principles is that they are the clinical equivalent in man of the phenomena which have been experimentally produced in lower animals. The mechanism of their operation can be envisioned by arranging established patterns of clinical syndromes or grouped defects as ordinates along a base line representing periods of prenatal development.[26] The several syndromes and separate defects characterizing different periods are interpreted

in their entirety as a connected series rather than unrelated entities. If agents, proven, or suspected of producing embryonic or fetal disease are plotted as abscissae, a grid results on which certain points represent associated cause and effect as judged by combined epidemiologic and embryologic criteria. At present, the positions of the post-rubella defects, mongolism and encephalo-ophthalmic dysplasia, and birth injuries are the only prenatal patterns which have been confirmed both by epidemiologic and embryologic data.

Ingalls[28] has studied encephalo-ophthalmic dysplasia as a function of the late prenatal and early paranatal periods concluding that anoxia was the most important causative agent. Other factors were placental abnormalities, hemorrhage, and intercurrent infections.

The position of birth injury is well established. The period of birth, however, includes varied stages of development depending on the degree of prematurity. Faber has recently reviewed factors leading to cerebral injury in the prenatal and paranatal periods.[29] Metabolic and mechanical factors were found to be of particular importance, especially those associated with placental bleeding and toxemia of pregnancy, prolonged or difficult delivery, anoxia, and anesthesia.

Other congenital malformations on the grid acquire position by embryologic evidence only. Information is not sufficiently refined for even the best observed agents, syphilis and rubella, to plot the precise period of clinical activity in relation to specific sequelae. Indeed, for a chronic disease such as syphilis, periods of activity must be inferred more from the consequences that are observed than from measurable clinical manifestations in the mother. Further study may be expected to yield information about many agents and many defects in relation to specific periods of development.

FUTURE EPIDEMIOLOGIC INVESTIGATION

Two principal lines of investigation are indicated. The first is a retrospective, systematic search of case records of pregnancies with field and clinical studies designed to determine the causative agents of observed defects or syndromes. The second, a prospective survey, colloquially known as the "follow-up" study, starts with identified instances of infection or other suspected agent occurring in the course of pregnancy and ends with a compilation and analysis of observed effects. Each method has advantages and disadvantages.

A retrospective survey is best suited to give concentrated information about particular developmental defects. It may be the only practicable method of investigating a rarely observed anomaly, its variants and associated defects. A high proportion of cases will be expected in which epidemiologic data relative to the mother will be grossly incomplete or inaccurate. Adequate evaluation of upper respiratory infections can scarcely be accomplished through retrospective survey.

The prospective survey may be counted on to provide more documented facts about risks and the expected consequences of a single agent. Since most pregnancies will be uneventful the numbers studied will necessarily be great, and significant results will likely come only through pooling the results of many investigators. The investigative technic is relatively simple; it is time consuming. The nature of each illness during pregnancy—infectious and non-infectious—is to be established as fully as possible by available diagnostic methods. The event is judged in relation to the ultimate result of the pregnancy, whether normal, anomalous, or of fatal outcome. Observed anomalies are correlated with manifestations of disease active at the stage of development when they originated. Some

anomalies, such as an aberrent vessel constricting the renal pelvis, may not become manifest for months or even years. Abortions and stillbirths are classed according to the date that death occurred. The presence of an epidemic permits quick accumulation of much data on a particular infectious agent; an opportunity not to be missed. It is evident that St. Hilaire spoke precisely when he said that the subject of "the causation of anomalous beings is immense." This becomes apparent when it is realized that as large a series as 5,000 pregnancies so studied would probably yield few instances of hemorrhage from placenta previa or of chickenpox in a particular week or even month of pregnancy.

Under the most favorable conditions of restrospective and follow-up investigation, certain sources of confusion must be clarified if systematic study of congenital anomalies is to be maximally productive. A number of anomalies, of which hydrocephalus is an example, are acquired over long periods of postnatal development; the inference is therefore reasonable that no critical prenatal stage is regularly associated with that anomaly. Again, the sequence of secondary reactions set into play by the primary agent—for example, those dependent on encysted or free intracranial hemorrhage following intrauterine anoxia —must be distinguished from sequelae directly related to the primary disturbance. Secondary changes consequent to hemorrhage, contractures, necrosis, glaucoma and the like, have been found to figure prominently in congenital abnormalities of the eye.[30] Finally, it is evident that the fetus may be subjected to multiple insults, either from the same general cause, as successive episodes of anoxia from hemorrhages of a placenta previa; or from chance action of two or more agents.

The difficulties just presented comprise definite but not insurmountable obstacles to the investigation of the cause and effect relationships of congenital anomalies. The method of study is epidemiologic, but the clinical and genetic variables are so numerous that the field can be explored systematically only through coöperative effort with clinicians skilled in the several specialties of medicine.

Even with satisfying information at hand on potentially pathogenic agents the problem still remains to interpret the mechanism of their action. Suffocation may be caused by numerous agents, but a single mechanism is common to all. It is reasonable to believe that in congenital anomalies far fewer mechanisms than agents are at work.

SUMMARY AND CONCLUSIONS

The period of prenatal development is of crucial significance in shaping an individual's ultimate physical status. Disease of the mother may result in fetal death, disability, or defect of the developing child, or in no manifest effect.

An interpretation of the pattern of developmental anomalies is accomplished by plotting as abscissae agents involved in fetal disease against ordinates representing the successive stages of intrauterine development. This results in a grid on which certain points represent associated cause and effect. German measles remains the best example of an agent, with its effects demonstrably related to development during the first trimester of pregnancy. Mongolism is the best example of an arrest due to multiple agents acting about the 8th week of life. Other agents and other kinds of arrests have been recognized but await definitive evaluation.

Three principal epidemiologic implications become evident in respect to causes of developmental arrests. Unrelated agents acting during pregnancy may give rise to the same type of arrest. Different types of arrest may

be caused by a single agent. The resulting anomaly is expectedly a function of the stage of development at which the agent is active.

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Community Health Services for Children in Eight Selected States*

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A COMPREHENSIVE study of child health services was begun more than 2 years ago by the American Academy of Pediatrics with the cooperation and assistance of the U. S. Public Health Service, and the U. S. Children's Bureau. It was undertaken to fill wide gaps in our knowledge of the extent and kind of health services and facilities available for children in all parts of this country.

Although many surveys and studies had been conducted prior to the present study, they did not provide answers to such fundamental questions as the number of children hospitalized per year in the United States, or the proportion of the general medical practitioner's time devoted to children. At the outset, and repeatedly in the course of the study, skepticism has been voiced to the staff concerning the need for gathering additional data, especially for community health services. Despite the widespread impression that agencies rendering community health services must have recorded their activities and that such records must have been pooled for community planning, actually, up to now, no answers have been available to such questions as these:

How many well child conferences are there in the United States?

How many children receive dental care through community agencies?

How many children are served by child guidance clinics or crippled children's services?

How many children are covered by school health programs?

How much public health nursing service goes to children?

How are these services distributed among the states and counties?

Limited answers, representing in some instances public programs, in others voluntary activities have been available, but there has been no composite picture of the total public and private effort to meet the health needs of children through community programs. The Academy therefore is attempting to gather material from all official and voluntary agencies to provide answers to the questions cited above and to similar unknowns. Specifically, it is bringing together information on the amount, distribution, and character of community health services for children.

In this paper it is proposed to present a brief preview of the kind of material that will be available when the study is completed. Pending the processing of data from all the states, it seemed desirable to devise a scheme for studying some of it in preliminary form. Several states have been selected to form the basis for this preview. In one sense,

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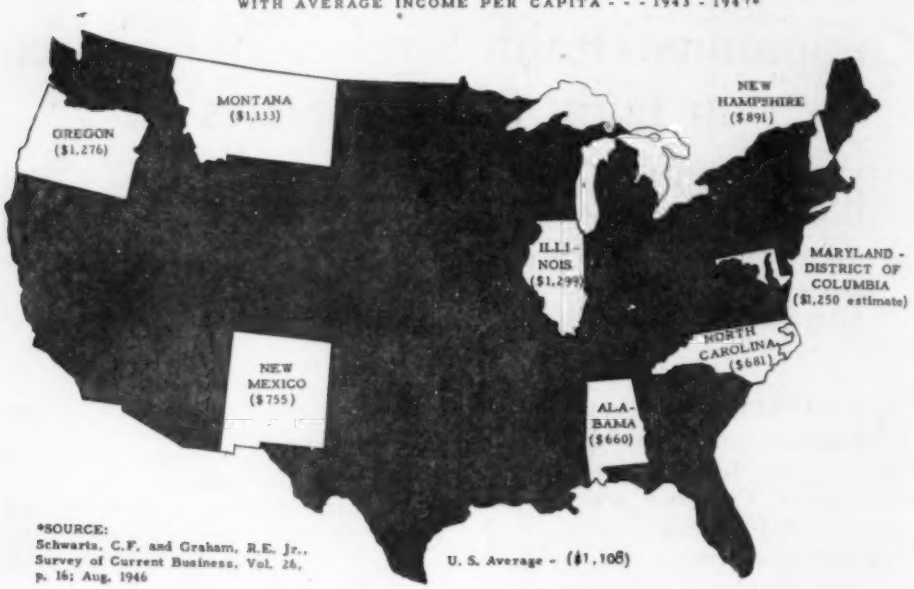
Fig. 1 GEOGRAPHICAL DISTRIBUTION OF SELECTED STATES WITH AVERAGE INCOME PER CAPITA - - - 1943 - 1947*


OREGON ($1,276)
MONTANA ($1,133)
NEW MEXICO ($755)
ILLI-NOIS ($1,299)
NEW HAMPSHIRE ($891)
MARYLAND - DISTRICT OF COLUMBIA ($1,250 estimate)
NORTH CAROLINA ($681)
ALA-BAMA ($660)
U. S. Average - ($1,108)
*SOURCE:
Schwartz, C.F. and Graham, R.E. Jr., Survey of Current Business, Vol. 26, p. 16; Aug. 1946

they represent a "little United States," which may be used to show the type of material later to be available for the whole country.

In selecting these states an attempt has been made to obtain an approximate sample of the whole country based upon such considerations as geographic distribution and size of state, per capita income, population distribution between metropolitan and rural counties, and the number of available physicians and hospital beds. This group of states is not, however, a true sample, for the selection was conditioned by the necessity of having to exclude states that had not yet finished collecting data. Therefore, it is not considered that this "little United States" is sufficiently representative of the country to warrant projection of national rates. However, the analysis of the services recorded for these states should present a useful picture. In terms of broad relationships, the findings that appear in the sample should be indicative of what may be expected from the completed survey. The relationship between urban and rural areas in amount and character of services furnished children should be a reasonably accurate picture of nation-wide conditions.

The states selected are: Oregon, Montana, New Mexico, Illinois, Alabama, North Carolina, New Hampshire, and a new state which has been "admitted to the Union" for our purposes, composed of Maryland, the District of Columbia, and two counties of Virginia. This "new state" was devised primarily for presenting hospital data, since facilities in the District of Columbia serve the surrounding counties. For community health facilities this device would not be necessary. It is retained, however, to make the material comparable for these selected states.

This group of states contains about 5½ million children under 15 years of age, or approximately 15 per cent of the nation's children.*

* Child population figures are 1945 estimates, arrived at by a special calculation based on births and school enrollment, and will soon be released.

TABLE 1

Community Health Services Provided by Official and Voluntary Agencies during One Year for Children in Each of 8 Selected States

State	*Medical Well Child Conferences*	*Mental Hygiene Services*	*Dental Services*	*Public Health Nursing Service*
	Number of Visits per 1,000 Children under 5	*Number of Patients per 1,000 Children under 15*	*Number of Dentist-hours per 1,000 Children under 15*	*Number of Home Visits per 1,000 Children under 15*
Maryland—District of Columbia	499	3.2	109	298
Illinois	329	2.9	19	434
Oregon	154	2.9	7	174
North Carolina	131	0.3	22	103
Montana	88	0.0	9	152
Alabama	64	0.0	5	66
New Mexico	61	0.0	2	152
New Hampshire	49	3.7	5	432

On the map, Figure 1, is shown the annual per capita income of each state and it can be seen that the range is wide, $1,299 for Illinois, to $660 for Alabama.

For the purposes of this study, counties have been classified in five groups,* according to their urban populations or their proximity to metropolitan centers. The percentage distribution of the children in the 8 selected states is reasonably similar to that for the country as a whole, except that the selected states are slightly more heavily weighted in favor of the greater metropolitan counties. Rates will be presented not only for each state but also by county group to show the degree of concentration of service in the metropolitan areas.

One of the outstanding advances in local public health organization during the last generation is the development of the well child conference. Only those were included who reported a physician in attendance and who provided some health supervision other than immunization. Summer round-ups, because they give no continuing supervision, were excluded.

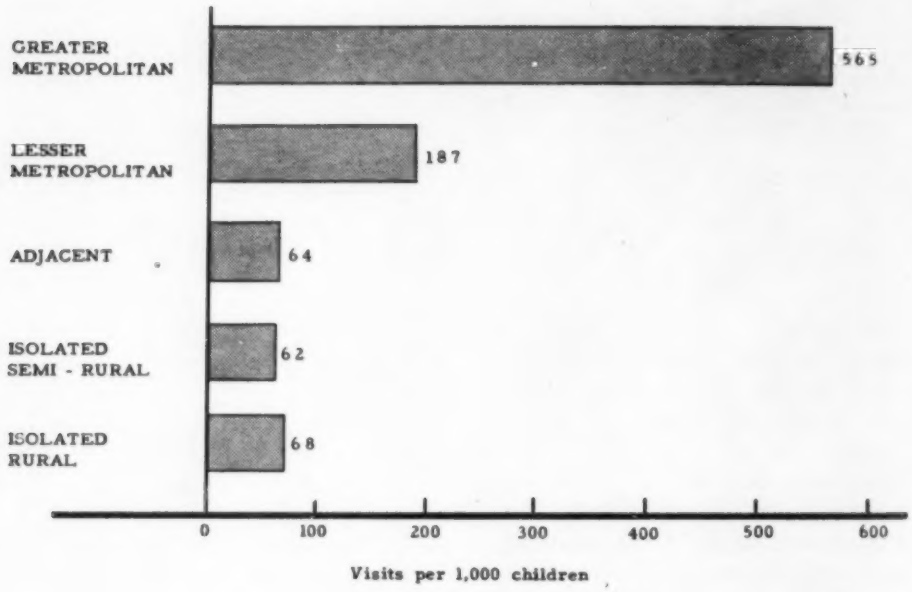
About 7½ per cent of the children under 5 years of age, in the 8 selected states, received some service from well child conferences. Each child was seen an average of three times annually. How wide the range is from state to state is shown in Table 1. The rate of visits for the highest state—499 visits per 1,000 children per year—is 10 times that of the lowest state.

That all children, regardless of their parents' economic status, are entitled to essential preventive health services is no longer a matter of controversy. The authors have previously [1] presented some preliminary tabulations from the North Carolina Study of Child Health Services to show that preventive services furnished children by physicians in private practice in rural areas are greatly deficient in quantity when compared with those furnished children in urban areas.

* A county is classified as metropolitan if it has at least one city of 50,000 or more inhabitants. Counties are also classified as metropolitan if they touch a metropolitan county, and if 50 per cent or more of its population, or at least 50,000 people, live within a metropolitan district. A *greater metropolitan* county is one in which there is located any part of the metropolitan districts of 1,000,000 or more inhabitants in and around the cities of Baltimore, Boston, Chicago, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, and Washington. *Lesser metropolitan* counties are all other metropolitan counties. Counties that touch a metropolitan county but are not themselves classified as metropolitan have been grouped together as *adjacent* counties. Counties that do not touch any part of a metropolitan county have been subdivided into *isolated semi-rural* and *isolated rural* counties. An isolated semi-rural county has at least one incorporated place of 2,500 or more inhabitants, and an isolated rural county has no incorporated community of 2,500 or more inhabitants.

MEDICAL WELL - CHILD CONFERENCES

Fig. 2
Number of visits during one year per 1,000 children under 5 years of age, by County Group in 8 selected states



It would be hoped, therefore, that the amount of preventive care furnished children by well child conferences in rural areas would exceed that furnished to children in cities, in order to help close the gap. Unfortunately, the reverse is found to be the case in the 8 selected states. Figure 2 shows the heavy advantages enjoyed by urban areas over rural areas in the amount of care furnished in well child conferences.

The relative paucity of well child services furnished to children by health agencies in rural areas is, of course, distressing, though not too surprising. The history of health organization in the United States shows that services have developed first and in greatest abundance in those communities best able to support them financially. The provision of funds by Congress in 1935 under Title V of the Social Security Act, for grants-in-aid to states was designed in part to enable the poorer rural areas to supply services more nearly equal to those offered in richer urban areas. The Act states that the funds are to extend and improve service "especially in rural areas and in areas suffering from severe economic distress." It is obvious from the foregoing facts, however, that the goal of equal health services for all children is far from attainment.

What are these well baby clinics like? Eighty per cent of them are administered by official agencies, the percentage increasing to 100 in the isolated rural counties. Though one hears the comment frequently that too many clinics are "baby clinics" only and do not follow the child until he reaches school age, it is found that 70 per cent of the sessions in these states were combined infant and preschool clinics.

Not only are there great inequalities between urban and rural areas in the

amount of services provided for children, but the services furnished seem also to vary in certain essential qualitative characteristics. Again children living in metropolitan areas seem to have the advantage. Real health supervision means repeated visits. The average infant served by a well child conference in metropolitan counties was seen almost five times per year, while the infant in isolated rural counties was seen less than two times.

There is a significant difference in the make-up of the professional staff of well child conferences. In greater metropolitan areas, there is a pediatrician in attendance at half of the sessions. In isolated rural areas, a pediatrician is present at less than one-twentieth of the sessions.

The last few years have seen increasing emphasis on the mental hygiene problems of childhood. Accordingly, agencies providing well child conference services were asked to indicate whether or not there was a psychiatrist or psychologist available for consultation with staff or parents. Less than one-seventh of the total sessions are provided with such service.

It was difficult to obtain exact data on the services available to children through special mental hygiene clinics. Services are provided sometimes on a state level and sometimes locally. It is recognized that children are seen for mental hygiene problems both in adult psychiatric clinics and in general pediatric clinics. For the purposes of this study, however, data was obtained only on mental hygiene services provided by agencies which primarily serve children. On this basis, for the 8 states as a whole, the rate of patients seen in mental hygiene clinics was 1.7 per 1,000 children under 15. The figures for each of the 8 states are shown in Table 1. Services in all states are meager and are nonexistant in 3.

Dental examinations of school children in many parts of the country have revealed that 95 per cent are in need of dental service. It seemed desirable, therefore, to find out how many children are receiving care under community programs. Of every 1,000 children under 15 years in the 8 selected states, about 20 per year are receiving care under community programs. Almost 80 per 1,000 per year are receiving only examinations without treatment. Eighty-eight per cent of the dental service is provided by official agencies. How the states rank in provision of dental services is shown in Table 1. In Maryland and the District of Columbia each 1,000 children received 109 dentist-hours of service annually compared to 2 in New Mexico. The disparity between urban and rural areas is shown in the following table:

County Groups	*Dentist-hours per 1,000 Children*
Greater Metropolitan	67
Lesser Metropolitan	18
Adjacent	10
Isolated Semi-Rural	10
Isolated Rural	12

One characteristic of a good dental service for children is the preponderance of fillings over extractions. Provided both services are freely available, the filling-extraction ratio may be taken as a rough index of the extent to which preventive dentistry is applied. The filling-extraction ratios for children under 15 years for the selected states are shown in the following table*:

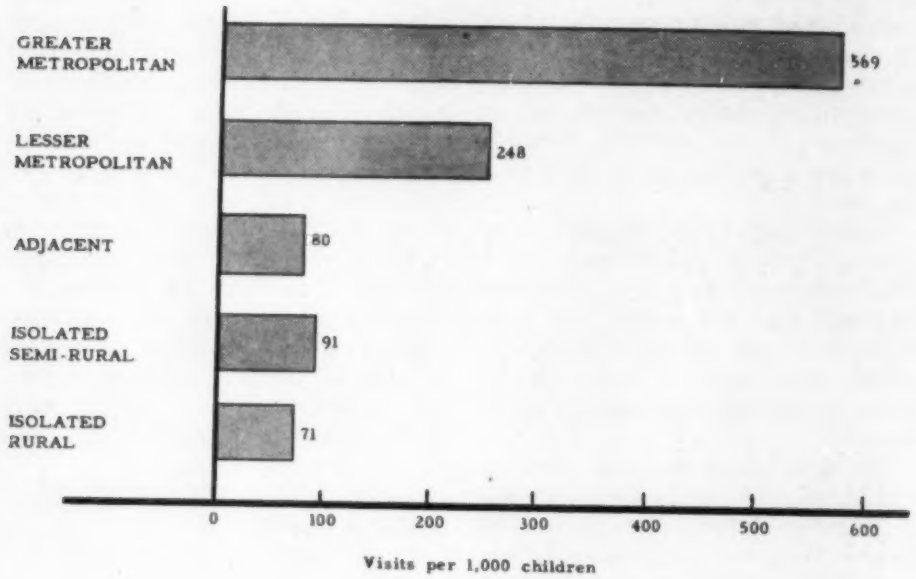
State	*Ratio*
Oregon	10.5
New Hampshire	4.7
Alabama	3.4
Illinois	3.3
Montana	2.8
Maryland—D. C.	2.0
North Carolina	0.9

In interpreting the above data on filling-extraction ratios, it should be noted that some states having high ratios provide very little in total serv-

* Not reported for New Mexico

PUBLIC HEALTH NURSING SERVICES

Fig. 3
Number of home visits during one year per 1,000 children under 15 years of age, by County Group in 8 selected states



ices. Thus Oregon and New Hampshire which have the highest and second highest filling-extraction ratios rank fifth and sixth in dentist-hours per 1,000 children. Maryland-District of Columbia and North Carolina which rank next to last and last, respectively, in filling-extraction ratio are first and third in dentist-hours of service.

Knowledge as to the number of public health nurses is not new data. What is new is the amount of service expressed in home visits which these nurses render to children. Table 1 shows the rate per 1,000 children and the variations among the states. Figure 3 shows the same marked rural-urban discrepancy that exists for other health services.

The community health services for which data have been presented, are furnished children in greatly varying amounts, depending on the state, and on whether the county is urban or rural. There seems, however, to be another factor involved, that of state planning. This is well shown by Table 2 which shows the number of visits made to well child conferences by children in metropolitan, adjacent, and isolated counties in each of the 8 states. Illinois has the highest per capita income of the 8, and the second highest number of visits per 1,000 children to well child conferences. However, Illinois ranks next to the bottom in the amount of services to children in isolated counties. The rate of visits per 1,000 children under 5 years of age in metropolitan counties in Illinois is overwhelmingly greater than in isolated counties. In Oregon and New Hampshire, on the other hand, although less service is provided, the distribution of well child conference services between urban and rural areas is much more equitable.

Although data shown in Table 2 are limited to well child conferences, the same type of wide variations in pattern

TABLE 2

Medical Well Child Conferences

Number of Visits during One Year per 1,000 Children under 5 Years of Age, by County Group in Each of 8 Selected States

State	Visits During One Year per 1,000 Children		
	Metropolitan Counties	*Adjacent Counties*	*Isolated Counties*
Maryland—			
District of Columbia	585	210	187
Illinois	481	15	26
Oregon	125	325	123
North Carolina	363	67	82
Montana	...	...	88
Alabama	180	29	22
New Mexico	...	...	66
New Hampshire	54	52	41

among the 8 states exist for the other community health services.

These are a few of the highlights of the material which is becoming available. Many more facts are now being tabulated concerning the character of the services rendered and the training of the personnel involved. The pertinent facts will appear in state reports, and the total picture will be given in the national report, to appear in 1948.

In summary, data have been presented based on 8 selected states showing amount, distribution, and character of certain community health activities for children. The picture shows not only the inadequacy of services in rural compared to urban areas, but also shows vast differences between states. This state differential is only partly accounted for by the rural character of states. It appears to be closely related to economic status and is influenced also by state planning.

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Public Health and Bedside Home Nursing Services*

I. Cities of 100,000 or Over

The existing pattern for community nursing service in numerous large cities presents at least two major agencies administering nursing for citizens. Health departments employ public health nurses paid from tax funds to perform the functions of the health department under the administrative direction of the health officer. Independent visiting nurse associations employ nurses primarily to provide nursing care to the sick on a visit basis at home. These associations are directed by a voluntary citizen board and are supported from voluntary contributions, fees for visits, or contracts from industrial and commercial concerns. Both groups of nurses offer family education for care of the sick, for health promotion, and prevention of disease, under the professional responsibility of attending physician, or health officer, according to the circumstances.

In considering the provision of a desirable organization of public health nursing for family service † including sickness care and the promotion of health and prevention of disease, it may be advisable to encourage the continuation of the voluntary agency for nursing care of the sick. In that event, well planned working agreements should be drawn up to assure coöperative effort and to avoid duplication or conflict in services or direction. This is important in the interest of efficiency and economy to taxpayers and to voluntary contributors.

Under such conditions the ratios of nurses to population for basic administrative needs in general will be one public health nurse for each 5,000 of the population, and one nurse for bedside care of the sick for the same unit of population, or a combined ratio of one nurse for each 2,500 of population. In some urban and suburban areas a ratio of one nurse per 2,000 and less of the population has been found desirable and has been supported with satisfaction by the community. In keeping with the comprehensive purposes of public health nursing for a family, a public health nurse for each unit of population is essential but she may be assisted by a professional or practical nurse for certain services

* Statement on public health and bedside home nursing services by an inter-organization group representing The National Organization for Public Health Nursing and the Subcommittees on Medical Care and Local Health Units of the Committee on Administrative Practice of the American Public Health Association called for by Resolution of the Committee on Administrative Practice at its meeting on September 14, 1946, at Ann Arbor, Mich.

Authorized for publication by the Committee on Administrative Practice, October 5, 1947.

† *Desirable Organization of Public Health Nursing for Family Service*, prepared by the Committee on Nursing Administration of the National Organization for Public Health Nursing in collaboration with representatives of national and federal agencies concerned with public health nursing, and published in *Public Health Nursing*, Aug., 1946.

The Committee on Administrative Practice of the American Public Health Association considered this statement at its meeting on November 11, 1946, and approved it with modification of item 7, Part II. This has now been changed to read: That for a basic minimum local public health service for administrative purposes not less than one public health nurse is required for each 5,000 of the population. Where bedside nursing care of the sick at home is offered, additional public health nurses assisted by graduate nurses without public health nursing preparation and practical nurses or other auxiliary workers will be needed up to a ratio of one to 2,000 or one to 2,500 of the population.

which do not require the special skills of a public health nurse.

In the above suggested ratios are included the directing, supervisory and supplementary staff as well as field nurses; supervisory and directing staff being in a ratio of not less than one nurse of supervisory grade for each nine field nurses.

It is assumed that nursing services for children attending public and parochial schools, whether provided for by the health department or under educational authorities, are included among the duties of the public health nurse provided for each 5,000 of the population, and sufficient supplementary assistance should be provided as indicated above.

It is further assumed as axiomatic that all public health nurses serving administrative needs under the official health or public educational authorities be members of a single tax supported organization, preferably under the executive direction of the medical officer of health, even in those situations where the salary and nominal appointment of nurses serving school children remains within the responsibility of the educational authorities.

In some cities a combination of the two official and voluntary public health nursing services (for administrative and for bedside care purposes) has been achieved under a single board representative of official and voluntary interests the health officer being the titular head of such a nursing service and the professional direction being by a director of nurses under his direction.

II. Small Cities and Rural Communities

A single public health nursing service is preferable in smaller cities, in rural communities in general, and where the population included within the health jurisdiction of local government is too small or too scattered to justify the existence of two public health nursing organizations such as have been described under I. In this event the service should be organized to serve the purposes of bedside care of the sick at home under the direction of the family physician and to serve the administrative nursing functions for the local health and educational authorities. Where more than one nursing agency now exists a combination of the two or more agencies should be undertaken. Support for such a single agency should be promoted as a major responsibility of the health officer. Tax funds alone, or combined with funds secured from voluntary contributions and earnings from individuals, or industries or commercial organizations should be considered. Recognition should be given to the influence which has been exerted through voluntary support and citizen consultation and direction of bedside care of the sick and health education in the home by visiting nurses. Such recognition of citizen influence is best expressed through such central organization and board and committee representation as will retain this community interest for public health nursing under the department of health.

The inclusion of bedside nursing service in a community program should be supplementary to and not be in conflict with the accomplishment of the protective health purposes of a health department. With basic official services of the health department provided by nurses in the ratio of one per 5,000 of the population, efforts should be made to increase the ratio of nurses to at least one per 2,500 so that bedside care of the sick at home, and family guidance in health with the approval or at the request of the family physician can be offered. Where distances are

long between homes, or where there is great need of nursing service and advice in the home, because of ignorance, poverty, or some other disadvantage, social or sanitary, or where a high level of public demand has been created by past services, the ratio of nurses (for both administrative and bedside or family education purposes) should be as much as one nurse per 2,000 of the population. A favorable ratio approximating this has already been achieved in some communities * where experience of the benefits of public health and bedside nursing has long been enjoyed and where the wealth of the population permits adequate support.

*Eastchester and Mt. Kisco, N. Y.; Dedham and Great Barrington, Mass.; New Haven, Conn.; and York, Pa.

III. Single Agency Desirable at Outset

In all instances where a community, large or small, urban or rural, industrial or residential, is faced with the initiation of public health nursing services for carrying out the obligations of state statute or local ordinances under the local health department (i.e., the functions of administrative public health nursing) or to meet the social ambitions of the community to offer nursing assistance to the sick at home and to reap the benefits of education in a way of life conducive to good health (i.e., the functions of home care of the sick and health education by the visiting nurse), every appropriate effort should be made to create a single organization. Such an organization should constitute the bureau of nursing of the local health department operated under the direction of a full-time medical health officer and a director of nurses. In planning for such a single public health nursing agency, the public, the officers of local government, and the physicians of the community should be informed that an adequate ratio of one nurse per 2,500 of the population is to be the goal. While the underwriting through tax funds to insure support of such a comprehensive community nursing service is necessary, the principle should be recognized that other sources of support may be earned through contractual relations with industry, commerce, insurance interests, and through fees from individuals able and willing to pay for home nursing care.

It must be borne in mind that at the present time in the great majority of local health jurisdictions in the United States the ratio of nurses serving the two purposes above outlined does not exceed one public health nurse per 10,000 of the population. Furthermore, it is at present a matter of great difficulty for state and local health officers to attain or maintain even that meager ratio. The shortage of trained personnel capable of doing the work required, low salaries offered and other conditions of employment do not attract nurses to this field of work. We cannot expect to attain the ratios above suggested as desirable until one or more events have come to pass, such as: a check to the present nation-wide inflationary process; an increase in the flow of well educated young women in schools of nursing and subsequently in schools of public health nursing; an improvement in personnel practices and the acceptance of the recommendation contained in the *Desirable Organization of Public Health Nursing for Family Service* that professional and practical nurses be considered essential to assist the public health nurse in those aspects of the program which do not require public health nursing skills, per se.

Only by experience and experiment can practicable and desirable ratios of

associated nursing personnel of different levels of preparation be discovered so that the high objectives now attempted solely by professionally qualified public health nurses may be substantially achieved without lowering standards of performance and results through the assistant services of nurses with less professional education or training.

HAVEN EMERSON, M.D., *Referee*

Social Hygiene Day, February 4

"Find the Missing Million" is the slogan for the 1948 National Social Hygiene Day which the American Social Hygiene Association has scheduled for February 4.

The observance will focus public attention on two urgent needs of the nation-wide battle against venereal diseases: the necessity of early case finding and strengthening the educational preventive programs.

The December issue of the *Journal of Social Hygiene* is devoted to material for use in connection with Social Hygiene Day. Other materials in connection with observances are available from the American Social Hygiene Association, 1790 Broadway, New York, 19.

Public Health Degrees and Certificates Granted in the United States and Canada During the Academic Year, 1946-1947*

THE Committee on Professional Education presents its 14th annual report of Public Health Degrees and Certificates Granted in the Academic Year 1946–1947. Following last year's experiment, all tabular data except two five year summaries are omitted. More detailed tables such as were published in previous years have been prepared and are available in mimeograph form on request from the office of the Association.

As formerly, the present report is based on a questionnaire returned by the administrative officers of the schools offering graduate degrees. Their replies have been subjected to statistical review only. Included in the tabulation are graduate students enrolled in courses leading to graduate degrees or certificates with the exception of public health nursing students. Among these, students receiving Baccalaureate degrees or Certificates in Public Health Nursing are included. The committee is indebted to the National Organization for Public Health Nursing for figures on public health nursing students and degrees and for permission to include them in this report.

The report is based on replies from 29 schools giving either or both public health and public health engineering degrees and from 33 of 35 schools giving approved courses in public health nursing.

The increase in both enrollments and degrees granted, noted in the previous year, has been greatly accelerated. The percentage increase was greatest among public health engineering students. Enrollment of public health and public health engineering students together increased by more than a third over the previous year, about one-quarter for the former, more than three-quarters for the latter. Since the low point of wartime enrollment in 1942–1943, the number of these students enrolled has more than doubled (Table 1). Enrollment in graduate public health nursing courses is not reported.

The number of all students receiving degrees has increased by more than one-fifth since last year, more than one-half for public health, more than double for public health engineering, and about 40 per cent for public health nursing students. Since the low point, the number of students receiving public health degrees has more than tripled, and of those receiving public health engineering degrees is more than five times as great. The number of public health nursing degrees has almost doubled since the low point of the war years in 1941–1942. In each of the three groups, more degrees were granted in 1946–1947 than in any of the last six years. It would appear that the arrears in training piled up during the war years are being substantially reduced.

As in previous years the professional background of the graduate students enrolled in public health courses was

* For previous reports see *A.J.P.H.*, Vol. 37, p. 67; Vol. 35, p. 1311; Vol. 34, p. 1264; Vol. 33, p. 1430; Vol. 32, p. 1360; Vol. 31, p. 1306; Vol. 30, p. 1456; Vol. 29, p. 1338; Vol. 28, p. 863; Vol. 27, p. 1267; Vol. 26, p. 819; Vol. 25, p. 341; Vol. 23, p. 1124.

TABLE 1—ENROLLMENT IN GRADUATE PUBLIC HEALTH COURSES AND STUDENTS RECEIVING GRADUATE DEGREES OR CERTIFICATES, FIVE YEAR SUMMARY, 1943–1947

Academic Year	Enrollment			Students Receiving Degrees or Certificates			
	Total	Public Health	Public Health Engineering	Total	Public Health	Public Health Engineering	Public Health Nursing
Total	3,113	2,554	559	6,926	1,525	293	5,108
1942–1943	387	323	64	1,057	159	24	874
1943–1944	460	396	64	1,119	207	35	877
1944–1945	540	462	78	1,204	270	38	896
1945–1946	730	607	123	1,468	353	63	1,052
1946–1947	996	766	230	2,078	536	133	1,409

TABLE 2—STUDENTS RECEIVING GRADUATE DEGREES OR CERTIFICATES—SUMMARY, 5 YEAR PERIOD, 1943–1947

Degree or Certificate	Total	1942–43	1943–44	1944–45	1945–46	1946–47
Total	6,926	1,057	1,119	1,204	1,468	2,078
Doctor of Public Health	34	7	10	8	3	6
Doctor of Engineering	3	1	2	..	..	..
Doctor of Science	11	1	3	..	3	4
Doctor of Philosophy	16	2	3	4	4	3
Master of Public Health	901	83	101	140	216	361
Master of Civil Engineering	14	3	5	1	1	4
Master of Science	222	13	29	17	31	132
Master of Science, Public Health	236	19	45	68	56	48
Master of Science, Public Health Engineering	11	1	4	..	4	2
Master of Science, Sanitary Engineering	41	2	1	..	16	22
Master of Science, Civil Engineering	12	..	..	1	1	10
Master of Arts	6	..	3	3	..	..
Master of Arts in Science	4	1	..	..	3	..
Master of Sanitary Science	56	..	..	18	18	20
Master's Degree (Nurses)	429	43	43	32	136	175
Diploma, Public Health	125	20	18	22	34	31
Diploma, Veterinary Public Health	12	..	..	6	4	2
Baccalaureate Degree (Nurses)	2,181	388	361	392	429	611
Certificate, Public Health	27	14	5	2	4	2
Certificate, Medical Technology	65	14	12	14	12	13
Certificate, Public Health Nursing	2,496	443	472	472	486	623
Other	24	2 [a]	2 [b]	4 [c]	7 [d]	9 [e]

a. Includes two Civil Engineers.
b. Includes one each of Doctor of Public Health Nursing and Master of Science in Preventive Medicine and Public Health.
c. Includes one each of Master of Science in Hygiene and Diploma of Industrial Hygiene and two Diplomas in Dental Public Health.
d. Includes one Doctor of Public Health in Nursing, two each of Master of Science in Hygiene and one each of Sanitary Engineer and Diploma in Industrial Health
e. Includes one each: Master of Science in Hygiene, Diploma in Industrial Hygiene, and Diploma in Dental Public Health; two Certificates in Tropical Medicine; and four Masters in Sanitary Engineering.

reported. Physicians numbered nearly two-fifths of the total; public health educators less than 30 per cent. Each group is about the same percentage of the total as in the previous year.

Reflecting in part the increase in enrollment of engineering students, the number of Master of Science degrees granted showed the largest increase during the year—from 31 to 131. The number of Master of Public Health degrees granted increased by more than one-third.

Twenty-nine schools reported offering graduate public health or public health engineering courses and degrees. Of these, 4 had no students registered for such courses, 14 had fewer than 10 students, of which half had fewer than 5 students. Of the 996 students enrolled, 928 were provided for in 11 schools. Enrollments in these 11

schools varied from 14 to 167 students.

Of the 669 students receiving degrees in 25 schools, 597, or nearly 90 per cent, were in the 10 schools of public health accredited by the American Public Health Association in 1946–1947. Of the remaining 15 schools granting degrees, only 2 granted more than 5 graduate public health degrees during the year.

The number of degrees granted by nursing schools ranged from 1 to 259. Nine of the schools granted fewer than 20 degrees or certificates; 3 gave degrees to more than 100 students.

One of the auxiliary aims of the accreditation program is a modicum of standardization of degrees in public health. In 1945, 26 schools offered a total of 26 different degrees and 16 different degrees were granted by 15 schools; in the present year 29 schools offered 24 different degrees and 20 different degrees were granted by 25 schools. This indicates that the number of different degrees being offered is gradually decreasing. Particularly rapidly declining in importance is the M.S.P.H. degree. More than one-fifth of the students receiving degrees (apart from those receiving nursing degrees) were granted the M.S.P.H. degrees two years ago; in the academic year of the current report these degrees represent only 7 per cent of the total.

One other fact is noteworthy. All 450 students receiving the degrees of Dr.P.H,. M.P.H., M.S.P.H., or D.P.H. took their training in schools accredited by the American Public Health Association.

W. P. SHEPARD, M.D., *Chairman*

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ONE WORLD

WENDELL WILLKIE'S famous phrase is nowadays too often quoted as a sneer rather than as an affirmation. This is because the nations are not behaving as if it embodied a truth. But facts are stubborn things—not much affected by human behavior. When men act as if proved facts were nonexistent, it may be very bad for people; but the facts remain unmoved. This *is* "one world"; and the basic truth is not altered by what is said or done at Moscow or at Washington or at Lake Success.

It is "one world" in which we live; and a very sick and sorry world. Dr. Martha M. Eliot in the leading article of this issue of the *Journal* describes "the tragic results of the war and its effect on the health and growth of children and youth, on infant mortality and the incidence of tuberculosis, and on their present opportunities for education and earning a good livelihood." In one small country "not atypical of others" she reports "that to take care of the known cases of bone tuberculosis alone among children 7,000 new hospital or sanitarium beds were needed. They had only 500 when I was there." She cites a sound and careful estimate that 20,000,000 children in Europe alone are in urgent need of supplementary feeding.

Most of us, as health workers, have studied published data of such surveys as this and know them to be conservative. We have not been favorably impressed by the Congressmen who have reported that they saw few cases of starvation in the corridors of the hotels at which they stayed or around the hospitable boards at which they were entertained. Furthermore, you and I perhaps realize more clearly than the representatives of many professions, that such a situation is not to be sighed about and forgotten but a challenge to action. The public health worker, the physician, the nurse, are trained to know that preventable disease and death is something to be stopped, just as the trained fire fighter knows that flames are to be fought—not only in our own household, but wherever they appear. We read last fall of the thousands of men, lawyers, business men, editors, hotel keepers, farmers, who left their normal tasks to work night and day on the mountains to check the forest conflagration on lovely Mt. Desert. We feel in the same way

about the flames of famine and disease raging through the continents of Europe and of Asia. Our tasks in the field of public health have been accomplished in this country because the American people realized the obligation to fight disease as a challenge to our common humanity. The Constitution of the World Health Organization states that "The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition." On countless occasions, the United States, through the activities of its great foundations, through its own governmental action, and through the generous participation of individual citizens in far-reaching programs of aid to those in need in other lands, has shown that our people recognize the bonds of common humanity.

We have shown this recognition through the food-saving program of the first World War, and through our large part in the support of UNRRA (which has saved many countries from immediate collapse during the last 3 years), and of the International Children's Emergency Fund which Dr. Eliot describes. Today, we meet a wider challenge in the proposal for assistance to the economic reconstruction of Europe now before Congress; and we recognize that this program is in the true sense a program of preventive medicine, since it is designed to build up that fundamental economic structure which is the essential basis of national health.

The moral basis for our participation in this program is a deep sense of a common responsibility for world civilization. In 1948, this moral responsibility is reënforced by very practical considerations. Whether we like it or not, our "One World" has not realized its Oneness. It is divided into two camps; one bloc of nations holds, however imperfectly, to the ideals of peaceful democracy, and another relies on totalitarian methods which—internally and externally—involve the doctrine of force. Democracy depends on prosperity and human satisfaction. Totalitarianism thrives on chaos and discontent. The immediate battleground of this "cold war" is in a group of border states in Europe. Our only hope of winning the war for democracy with peaceful means lies in the economic rehabilitation of these nations. The motives of humanitarianism and self-interest are in full and complete accord.

The United States refused to recognize "One World" in 1918; and the result was a second World War. If our aid to Europe is too little or too late, a third World War is almost inevitable.

The text of the future must be that splendid passage of John Donne's quoted by Ernest Hemingway with such notable effect:

"No man is an Iland, intire of it selfe; every man is a peece of the Continent, a part of the maine; if a Clod bee washed away by the Sea, Europe is the lesse, as well as if a Promonotorie were, as well as if a Mannor of thy friends or of thine owne were; any mans death diminishes me, because I am involved in Mankinde; and therefore never send to know for whom the bell tolls; It tolls for thee."

PUBLIC HEALTH IN THE EIGHTIETH CONGRESS

THE Eightieth Congress is now entering its second regular session and it seems opportune to review its accomplishments in the field of public health during 1947 and to note the chief items on its agenda for 1948.

The only important action taken in the first session affecting health was the approval of the budget for 1947–1948; and, in general, this action was encouraging.

An allotment of $75,000,000 was authorized for grants-in-aid to the states to assist in the provision of hospital and health center facilities under the Hill-Burton Act passed by the 79th Congress. Aside from this sum, the regular budget of the U. S. Public Health Service was increased from $104,088,516 (for 1946–1947) to $117,848,100 for 1947–1948. Funds for the Special Nurse Training Program were reduced by nearly $12,000,000; while the chief increases (over 1946–1947) were as follows:

National Cancer Institute and grants for cancer control	$10,228,000
Mental hygiene activities and grants to states	5,618,000
National Institute of Health, operational	4,159,052
Beginning of construction of clinical research hospital	2,650,000

The budget of the Children's Bureau remains substantially unchanged except for a reduction of $13,664,000 in EMIC appropriations. Twenty-two million dollars are again available for grants to states (including maternal and child health, crippled children and child welfare).

With regard to the future, bills have been introduced and are now pending, which contemplate further expansion of 6 specific federal health activities—as follows:

1. Cancer research and control bills (S. 93 introduced by Senator Pepper, and S. 1130, introduced by Senators Taft and Smith, both referred to the Senate Committee on Labor and Public Welfare; similar House bills H.R. 100, 292, and 780 referred to the Committee on Foreign Affairs; and similar House bills H.R. 977 and 3464, referred to the Committee on Interstate and Foreign Commerce). Several of these bills authorize the President to mobilize in the United States an adequate number of the world's outstanding experts in a supreme endeavor to discover means of curing and preventing cancer. Some of these bills call for independent cancer commissions; some partially duplicate provisions of P.L. 410 enacted by the 78th Congress; and to some extent their provisions were covered in the proposed National Science Foundation Bill vetoed by the President last August on technical grounds.

2. Heart Disease Bills. The Javits bill (H.R. 3762) calls for the creation of a National Heart Disease Institute in the National Institute of Health. It provides $2,000,000 for buildings and facilities and contemplates a broad program of research, treatment and prevention; including state grants. This bill is in the House Committee on Interstate and Foreign Commerce. Another bill (S. 720, Senator Pepper) calls for the mobilization of the world's outstanding experts, as proposed in the case of cancer.

3. An important bill (S. 176, Senator Murray) provides for the establishment of a National Institute of Dental Research to be set up in the National Institute of Health. It calls for an appropriation up to $2,000,000 for construction of buildings and facilities and for an annual budget of $730,000. This bill passed the Senate on July 24; and similar bills (H.R. 574 and H.R. 4200) are before the House Committee on Interstate and Foreign Commerce.

4. The problem of School Health Service is dealt with in S. 1290, (Senator Saltonstall) and H.R. 1980 (Representative Howell). These bills are in the hands of the Committee on Labor and Public Welfare of the Senate, and the Committee on Interstate and Foreign Commerce of the House. They provide for a program of demonstration and personnel training and of grants-in-aid to provide school health services "for the prevention and diagnosis of physical and mental defects, and conditions and the treatment of such defects and conditions"; and contemplate an expenditure of $10,000,000 to $12,000,000 as a starter. This program is to be administered by the Federal Security Agency. It was supported at the hearings by Dr. Atwater for the American Public Health Association.

5. S. 1714 (Senator Pepper and others) calls for $20,000,000 to $30,000,000 a year for a marked expansion of "services and facilities to promote the physical and mental health of mothers during maternity and of children under 18 years of age and $15,000,000 to $20,000,000 for crippled children. This is before the Committee on Labor and Public Welfare of the Senate.

6. S. 1455 (Senator Taft) and H.R. 3925 (Representative Wolverton) provide authorization to the U. S. Public Health Service to make grants to postgraduate schools of public health to assist in improving the training of public health personnel. These bills are before the Senate and House Committees referred to in preceding paragraphs.

The general objectives of all these measures are sound. The Javits bill (H.R. 3762) for heart disease control, the Murray bill (S. 176) for dental research, the Saltonstall bill (S. 1290) for school health, and the Taft-Wolverton bill (S. 1455 and H.R. 3925) for grants to schools of public health would seem to deserve prompt and favorable action.

In addition to these proposals—dealing with specific activities, there are 3 measures of even more fundamental importance, whose enactment should be immediately completed by the Second Session of the 80th Congress. These are:

1. The World Health Organization Bill (S.J. Joint Resolution 98, Senators Vandenberg and Connally, and H.R. 161, Representative Judd). This involves formal approval of the Constitution of the WHO as drawn up in June, 1946, at the conference held in New York on the invitation of our government. This Constitution comes into full force only when approved by 26 nations and but 16 have as yet approved, since many governments naturally desire to be certain of the sponsorship of the United States. Thus, the WHO now functions only through an Interim Commission. The joint resolution was unanimously passed by the Senate last July and unanimously reported by the House Committee on Foreign Affairs but not acted upon on the floor. Its final adoption is urgently called for.

2. A bill to create a Federal Department of Health, Education and Security (S.140, Senators Fulbright and Taft, and S. 712, Senator Aiken). This measure has been reported favorably by the Senate Committee but has not yet been passed by either house. It is in general a sound program and should be enacted in suitable form. The Fulbright-Taft Bill is, at present, defective however, in its too sharp and rigid separation of the functions of health, education and welfare. The Children's Bureau which necessarily cuts across all 3 fields is not even mentioned in the bill. It should be revised in the light of testimony given at hearings of the Committee on Expenditures in the Executive Departments last spring by Dr. E. L. Stebbins and Dr. V. A. Getting—and particularly by Dr. R. M. Atwater, representing our Association. The Aiken bill (S. 712) is sounder in these respects.

3. Stream Pollution Control Bill S. 418 (Taft and Barkley) and H.R. bills 123, 315, 470, and 2990 provide for a comprehensive water pollution abatement and control program. This measure has passed the Senate and is before the House Committee on Public Works. It should be promptly passed.

In the field of medical care there are two major bills beore the Congress. The National Health Insurance and Public Health Act (S. 1320) sponsored by Senators Murray, Wagner, Pepper, Chavez, Taylor, and McGrath; and H.R. 3548 and 3579, sponsored by Representatives Dingell and Celler is a revised version of the old Wagner-Murray-Dingell bill, providing a comprehensive plan for national insurance against the cost of illness. Its general principles are in accord with the recommendations of competent experts in this field and with the practice of most democratic countries. The National Health Act of 1947 (S. 545, sponsored by Senators Taft, Smith, Ball, and Donnell) is based primarily on the principle of a dole to the indigent administered on the state level. Extensive hearings have been held by the Sub-Committee on Health of the Senate Committee on Labor and Public Welfare. It is rumored that the Taft bill will be revamped. In their final form, these bills should be carefully scrutinized in relation to the program adopted by our Association.[1]

Finally, since housing is an essential and vital factor in public health, mention should be made of the Taft-Ellender-Wagner bill (S. 866)—paralleled by H.R. 43 (Representative Celler), and H.R. 2523 (Representative Javits). This is a bill formulating a broad and comprehensive program for stimulating private building for the middle-income group and providing subsidized housing for the low-income group. It follows the general lines of the National Housing Act of 1937 and should be passed. It has been reported favorably by the Senate Committee on Banking and Currency but has not passed either house. It seems likely that some legislation

along this general line will be approved but in view of the bitter opposition of the House Committee on Banking and Currency to constructive housing legislation, the bill should be carefully scrutinized for jokers. It would be better to have no legislation at all than a bill which was deliberately framed so as to be unworkable.

In general, then, there is much legislation of vital importance to pubic health now before Congress; and there are many other bills than those cited here. Except for the appropriations for 1947–1948, not a single one of the 12 measures reviewed has passed the House; and only 3 (the World Health Organization Bill, the Stream Pollution Control Bill, and the Dental Research Bill) have passed the Senate. If the 80th Congress is to redeem its reputation, it must move rapidly. We hope it may be realized that in the year of a National Election, the soundest politics are to be found in constructive performance.

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1. *Medical Care in a National Health Program.* An Official Statement of the American Public Health Association. Adopted Oct. 4, 1944. *A.J.P.H.* 34, 12:1252–1263 (Dec.), 1944.

THE PRACTICAL NURSE—HER FUNCTIONS AND HER TRAINING

THE problem of the place of a sub-professional nursing attendant in our public health program has long been under debate; and the present shortage of professional nurses has brought this problem into sharp focus since the war. The attempt to meet such a shortage by lowering established standards of nursing education is clearly not the road to take; but the recognition and licensure of nursing attendants offers real promise. It is of interest to note that the British are considering changes in their nursing curriculum, *not* to weaken its sound theoretical basis, but to decrease teaching of technical procedures and increase broad training in public health.

A really comprehensive survey of the problem of the sub-professional nurse has just been prepared by Dorothy Deming [1]; and its appearance is particularly timely when discussion of this subject is more widespread and more purposeful than has ever been the case before. Miss Deming calls the functionary with which she deals *The Practical Nurse*—a term which some of us have always deplored. A small amount of knowledge and competence is not more "practical" than a larger amount of knowledge and competence and the term "trained attendant" seems preferable. We need not quarrel over terminology, however; and the term "Practical Nurse" has been adopted as more generally understood by the public than any other name.

The kind of person Miss Deming has in mind is clearly defined as "a person with specified training of 9 to 18 months" (following an eighth grade education), "licensed in the state in which he or she is practising, if a state law exists, and serving in homes, hospitals, public health or industrial agencies under the direction of a licensed physician and—desirably—the supervision of a professional registered nurse. Ward maids, orderlies, volunteer nurses aides, and professional undergraduate students still in training do not fall into this classification."

The idea of recognizing such a type of worker and providing special training for her preparation goes back for 3 decades. It was first advanced by a Committee to Study the Nursing Problem of the American Hospital Association in 1916; endorsed by the Committee for the Study of Nursing Education (under Josephine

Goldmark's executive leadership) in 1923; and by the Committee on the Grading of Nursing Schools (May Ayres Burgess) in 1928. The writer of this editorial vividly recalls the reluctance with which some of the leaders of the nursing profession accepted the recognition of a class of subsidiary nurse in 1923; but, in spite of reluctance, they realized the logic of the case.

Unrecognized and uncontrolled nursing service of this kind has, of course, long played an important role in our program of home and institutional care of the sick. Census data classify somewhat under 200,000 persons in this general category in 1940 (about half of whom were "practical nurses and midwives" and half "attendants in hospitals and institutions.") Studies of the A.N.A. indicated that 42 per cent of the total nursing care in hospitals without schools of nurses and 17 per cent in hospitals with schools of nursing was provided by paid auxiliary workers. Only a small fraction of these auxiliary workers, however, have had any formal preparation for their task. A special A.N.A. analysis indicated that only 9 per cent of the paid auxiliary workers in hospitals held licenses for their work; and this checks with the fact that 19 states and the territory of Hawaii reported that 31,500 licenses had been issued to practical nurses and attendants during a period from the enactment of the first licensing laws up to 1945 (less than two-thirds of all who had ever registered in 13 of these states having kept their licenses renewed).

Miss Deming points out that, if the "practical nurse" program is to work, 3 conditions must be fulfilled. First of all, it is essential that all the states establish definite procedures for licensure of the group in question. Following the example of Virginia in 1918, 19 states now have such a provision, although only in New York is it illegal for anyone to nurse for hire without qualification as either a registered professional nurse or a licensed nurse (this provision being temporarily waived during the war).[2] Only confusion and inadequate care of the sick can result without clear legal definition and state licensure of auxiliary personnel. Without such safeguards (now in force only in New York and Hawaii) "anyone may don the uniform, imitate the methods, language, and procedures of practical nursing without so much as a bowing acquaintance with illness—and at any rate of pay."[2] Secondly, the training procedure which qualifies for admission as a "practical nurse" must be formulated and defined. Various types of training are now offered by hospitals alone, by privately operated schools in coöperation with hospitals, and by "vocational courses" frequently sponsored by boards of education. The length of the course varies from 9 months to 2 years. It is important that the program should be made more uniform and designed specifically for the type of work to be performed and should avoid the temptation of developing into a "pseudo-professional training of inferior quality." Leadership in the development of educational standards must come from the organizations representing professional nursing. An important step along this road has been taken by the U. S. Office of Education in a detailed job analysis of practical nursing, prepared by a Working Committee on Practical Nurse Training, which included 8 representatives of the nursing profession, 2 of the practical nurse field, 3 educators, 2 physicians, 1 hospital administrator, and 1 laywoman. It contains more than 100 pages of individual functions with a precise statement of what the practical nurse must do, what she must use, and what she must know, in the performance of each specific task.[3] General suggestions follow as to the organization of training programs in the light of this analysis; and a representative committee is at work under the

auspices of the Office of Education on the preparation of a more definite and detailed curriculum guide.

Finally, the work of the "practical nurse" in practice should be carried on always under medical control and so far as possible (particularly in institutions and in public health nursing organizations) under the direct supervision of the professional nurse.

The reasons why development of this type of auxiliary nursing is logical and necessary are as follows:

1. The number of professional nurses is not great enough—and is not likely ever to be sufficient—to meet all of our total needs for the care of the sick. The educational and personal qualifications necessary for the practice of nursing as a profession are, and must be, too high to provide a reservoir of 600,000 such professional workers.

2. The cost of auxiliary nursing is materially less than that of professional nursing. Miss Deming's figures show in present practice a differential of $5 to $40 a month between the base salaries of the 2 groups in various types of institutions. If we take $10 as a general figure, $24,000,000 a year is saved by the employment of 200,000 "practical nurses" instead of a similar number of professional nurses.

3. The most important of all reasons why the task of "practical" nursing should be defined and developed is that there is a vital kind of service to be rendered, a field of service which calls for specific training but which does not require the advanced education of the professional nurse. The extent of this need is certain to be even greater in the future than in the past in view of the relatively increasing problems of care of chronic disease and of convalescence. The sub-professional nurse is with us and has always been with us; but nine-tenths of such persons are unprepared for their tasks. The challenge is concrete and real. We must develop a sound program for meeting it; and the primary responsibility for this development rests in the hands of the nursing profession. As Miss Deming says, the first step is "the complete recognition and acceptance by professional nurses and professional nursing organizations of the practical nurse and practical nursing, wherever they function. The results of this acceptance would be, obviously, establishment of suitable schools of training, promotion of licensure, development of adequate employment centers for the distribution of service, and professional supervision. The national and state professional nursing bodies already have all the experience, machinery, and knowledge necessary to attain these goals. They could secure the funds. All that is needed is the desire to move forward."

REFERENCES

1. Deming, D. *The Practical Nurse*. New York Commonwealth, 1947.
2. Recent legislation on this point is reviewed in the *J.A.M.A.* (Nov. 29), 1947, p. 846.
3. Practical Nursing. An Analysis of the Practical Nurse Occupation with Suggestions for the Organizing of Training Programs. Federal Security Agency, Office of Education. Misc. N1. 8. Sup't. of Documents, Washington, D. C., 1947.

A SIGNIFICANT STUDY OF EPIDEMIC GASTROENTERITIS

EPIDEMIC gastroenteritis is a common problem and has been a very puzzling one; but Gordon, Ingraham, and Korns[1] have recently published the results of a study which carries us a long step forward in the understanding of at least one form of this disease. It is gratifying to note that this contribution comes—not from a university or a specially endowed research laboratory—but from the Divisions of Laboratories and Research and of Communicable Diseases of the New York State Department of Health.

The particular disease in question has been present in epidemic form in several New York State institutions. It is characterized, clinically, by sudden onset, profuse diarrhea, usually by vomiting, often by cramps, headache, and dizziness. Fever is slight or absent. In previous studies, no characteristic bacterial invaders could be demonstrated.

The experiments now reported were made with 28 human volunteers; and the plan of study was direct and simple with no wasted motion but with adequate controls, all subjects being kept under hospital isolation prior to and during the tests. The epidemiologist of today is, of course, fortunate that in dealing with the relatively mild infections which now mainly concern us, he can use human subjects freely. The pioneer students of typhoid fever and diphtheria were denied this short cut.

The results of these studies showed clearly that the causative factor was filterable since the disease could be produced by filtered stool or mouth washings from previously existing human cases; and that it was a reproducible virus—not a toxin—since it could be passed through 3 successive human hosts.

Infection resulted regularly from the oral administration of either stool or throat washings; but *not* by inhalation of similar material. This result is in conflict with those reported by Reimann who found the respiratory route most effective for the virus of a disease which was clinically similar but which may, of course, have been a different one. Gordon and his colleagues had no success in transmitting the disease from attempted culturing of the virus on chick embryo.

In the milder infections, of either the respiratory or the digestive tract, it seems probable that we are dealing with a wide diversity of causative organisms. One might almost suggest that the more deadly pathogens represent stabilized types as compared with greater variability among the commoner and less serious maladies. Whether the form of gastroenteritis studied at Albany has any relation to our winter outbreaks of what the public knows as "intestinal flu" or to the infectious diarrhea of infants—no one can yet tell. Apparently, however, Gordon and his associates have laid the basis for an understanding of one form of gastroenteritis, as a disease spread by personal contact (clearly indicated by earlier epidemiological studies in the institutions affected) and involving transfer of a virus present in the mouth and in the intestinal excreta to the mouth of a susceptible victim. This places the disease studied in the same broad epidemiological class as infectious jaundice and poliomyelitis—though with significant differences. The authors have made a contribution to our knowledge which may well stimulate fruitful comparative studies on other similar infections.

REFERENCE

1. Gordon, I., Ingraham, H. S., and Korns, R. F. Transmission of Epidemic Gastroenteritis to Human Volunteers by Oral Administration of Fecal Filtrates. *J. Exper. Med.*, 86:409 (Nov.), 1947.

Recommended Methods for Rabies Control*

A Conference on Rabies held at the University of Pennsylvania, Philadelphia, on April 9, 1947, called by Dr. R. A. Kelser, Chairman of the Special Committee on Rabies of the American Veterinary Medical Association, and attended by representatives of the American Medical Association, the U. S. Public Health Service, the Bureau of Animal Industry of the U. S. Department of Agriculture, U. S. Livestock Sanitary Association, American Animal Hospital Association, American Veterinary Medical Association, and the American Public Health Association, resulted in the series of principles and recommendations presented below. The Association's representative, Haven Emerson, M.D., reported them to the Committee on Research and Standards at its meeting on October 6, 1947, and it was voted to publish them in the *Journal* as recommended methods for a program for the control of rabies in the United States.

The Conference unanimously agreed on the following principles and considerations in connection with such rabies control program as might be undertaken on a national basis:

a. Rabies in the United States is of sufficient importance to make it desirable that the federal government participate in means for its control through coöperation with the several states, contributing funds and personnel.

b. Rabies in man is generally a disease reportable to local and state health authority. Rabies in lower animals should be specifically a reportable disease to be reported to public health or other responsible state health authority. It should be reported by states, with place of occurrence specified. Through a central federal agency, the consolidated information should be assembled, analyzed, and distributed to all states, agencies, and individuals having responsibility in a rabies control program.

c. In a program for the control of rabies in the United States prime consideration must be given to: (1) adequate diagnostic facilities, (2) the control of animals capable of transmitting the disease, and (3) mass immunization of susceptible animals, particularly dogs.

Diagnostic Facilities—To be considered adequate, facilities for the diagnosis of rabies should include not only provision for the microscopic examination of brain specimens from suspected animals but also means for the inoculation of laboratory test animals. The number and location of laboratories performing services connected with the diagnosis of rabies should be adequate to provide prompt service within reasonable distances. Further, facilities should be provided for maintenance of suspected cases of rabies in lower animals under proper veterinary observation.

Control of Animals (dogs, cats and wild life) Capable of Transmitting Rabies—Control measures should include the following:

a. Licensing of all dogs.

b. Proper disposition of ownerless, unwanted, and stray domestic animal pets.

c. As soon as rabies appears in a community, strict control of all dogs should be enforced for whatever period of time may be considered necessary. Dogs should not be permitted to run at large but should be properly confined on their owner's premises and only be permitted away from same when

*Adopted by the Committee on Research and Standards, October 6, 1947.

under proper restraint by a responsible individual.

d. Dogs which have bitten persons or other animals, and dogs which are suspected of having rabies, should be confined in a suitable, authorized place under veterinary supervision for a period of not less than 14 days.

e. Dogs known to have been exposed to rabies should be destroyed or kept confined for a period of not less than 6 months.

f. Dogs under 6 months of age, being particularly susceptible and less satisfactorily immunized than older animals, should be confined until the area is certified as officially free of rabies.

g. Adequate provision and facilities for enforcing all regulations and requirements connected with the control program should be made available.

h. The control program should be continued for a period of at least 90 days subsequent to the last reported case of the disease in animals.

i. Should rabies be found to exist in wild life, prompt arrangement should be made for active coöperation with the U. S. Fish and Wild Life Service and the analogous agency of the state involved. In this connection, when rabies has become established in wild species a program for reducing the number of individuals of affected species should be instituted and continued until the disease disappears. Routine brain examinations should be made to determine the incidence of the disease in the wild species and when it has abated.

Mass Immunization—The vaccination of dogs, combined with other control measures as indicated herein, provides the most satisfactory method for the prompt control of rabies. Vaccinated dogs, when properly tagged, may be allowed at large 30 days after vaccination. Vaccination should consist of at least one injection of an immunizing dose of an accepted canine rabies vaccine. Evidence indicates that a single 5 ml. subcutaneous injection of an approved vaccine is effective in a mass vaccination program. However, the injection of 3 doses of vaccine in 5 ml. amounts, a week apart, provides greater immunization and should be advised when practical. For permanently reducing the number of susceptible dogs, it should be suggested that dog owners have their dogs immunized annually.

In any rabies control program it is deemed essential that a local (county or municipal) Rabies Advisory Committee be organized to facilitate operational functions and coöperative effort. Further, the Conference agrees that an educational program should be launched by appropriate authorization, representing federal, state, and local agencies, to explain the necessity of control measures, including the efficacy of the rabies vaccines now approved by the U. S. Bureau of Animal Industry and the National Institute of Health. The object of such an educational campaign is to acquaint the public and owners of dogs and other pet animals with pertinent facts concerning rabies and the reasons for and importance of the measures taken for the control and eradication of the malady and the value of specific immunization against rabies. The advisability and desirability of utilizing vaccination not only for the control of the disease during an outbreak, but also in building up and maintaining a relatively highly immune dog population through the annual vaccination of dogs with rabies vaccine should be pointed out.

In view of the essential existing responsibility of the Bureau of Animal Industry of the U. S. Department of Agriculture, the U. S. Public Health Service, and the U. S. Fish and Wild Life Service, this Conference recommends that the function of coördinating a campaign for the control of rabies on a national scale be vested jointly in these three agencies. A plan for accomplishing this on a coöperative basis can undoubtedly be worked out through consultation of representatives of the agencies involved.

The principles and recommendations on which this Conference has agreed should be considered in a rabies control program on a national scale. In general, they are in accord with the pro-

cedures recommended by the Subcommittee on Rabies, Committee on Animal Health, National Research Council[1] and the report (now in press) of the Rabies Committee of the New York Academy of Medicine. There are other reports on rabies and its control by various other agencies, and omission of reference to them does not mean that the conclusion of this Conference is or is not in general agreement with them. The Report of the Subcommittee on Rabies of the National Research Council and that of the Rabies Committee of the New York Academy of Medicine happened to be readily available during discussions of the Conference.

REFERENCE

National Research Council, *Reprint and Circular Series, No. 126*, May, 1946.

Criteria for Accreditation

IN conformance with the policy of the Committee on Professional Education to publish changes in Criteria at least nine months before the beginning of the academic year, the Criteria for Accreditation of the degrees of Master of Public Health and Doctor of Public Health for the academic year 1948–1949 are printed below. In general, the new Criteria follow the principles expressed in the Criteria which were used as the basis for the accreditation of schools during the academic year 1947–1948.

The phrasing of Criterion 8 (under section b) has been rewritten to make its intent clearer and less arbitrary, but without any change in basic intent. Section 12 is modified so as to restrict admission of candidates for the Dr.P.H. degree to holders of a prior doctoral degree in some field. Other modifications are of essentially an editorial nature.

Criteria for Institutions To Be Accredited for the Degree of Master of Public Health (Diploma of Public Health in Canada) and for the Degree of Doctor of Public Health, for the Academic Year 1948–1949 *

Criteria for Both Degrees

The Institution

1. Any institution to be accredited must be a member of the Association of American Universities, or present evidence that it may reasonably be considered as qualified for such membership.
2. The school, faculty, or council administering courses in public health must have such practical autonomy that requirements for the degrees are effectively controlled by the public health faculty.
3. The teaching of public health must be under the direction of a full-time teaching faculty which must include, in addition to assistant professors and others of lower rank and in addition to part-time appointees:
   a. One member of professional grade as director of the school, or department, and at least two other members of professorial or associate professorial grade—all three primarily responsible to the administration of the school, and
   b. At least three other members of professorial or associate professorial grade, either primarily responsible to the school or giving full-time to the university and carrying specific major responsibility for teaching and research in the school. Such a minimum faculty could provide for a body of graduate students in public health totalling not more than approximately thirty such students.
4. The school or department must have an assured minimum basic income adequate for its teaching and research functions and for meeting the various criteria outlined. Such income should be construed to include income from endowment of the school, contributions made from general university funds, and grants made over a period of at least five years from sources outside the university.
5. Proper housing must be available, including lecture rooms, seminar rooms, and adequate laboratory facilities for the teaching of subjects in the field of microbiology, including microscopes, culture media, apparatus, etc.; for the teaching of vital statistics, including calculating machines for student use, and apparatus for chart-making, with tabulating machinery accessible for demonstration purposes, and for the teaching of sanitary engineering, including laboratory facilities for

* Adopted by the Committee on Professional Education of the American Public Health Association, February 21, 1947, amended October 6, 1947. Approved by the Executive Board, October 20, 1947.

the examination of water and sewage and for the demonstration of the basic principles of hydraulics.

6. Library facilities are essential to the extent of at least 3,000 volumes in the general field of public health, including such special topics as epidemiology, microbiology, vital statistics, sanitary engineering, medical economics and medical sociology, nutrition, and the like, and current periodicals (not including health department reports) to the number of at least 50 in the fields mentioned above.

7. There must be available conveniently located administrative units of public health services which can be utilized for observation and criticism in the basic courses for the Master of Public Health, and which are of sufficiently high quality to make such observation fruitful.

CRITERIA FOR THE M.P.H. DEGREE

The Course

8. Candidates to be admitted for the degree of Master of Public Health (Diploma of Public Health in Canada) may be either:

   a. Holders of the degree of M.D., D.D.S., or D.V.M., or equivalent degree, from an acceptable institution; or

   b. Holders of the Bachelor's Degree with adequate training in mathematics and the natural sciences, including chemistry and biology, and also qualified in some professional capacity to pursue education in public health.

   The latter qualifications may normally be fulfilled either by

   x. Professional academic qualifications in engineering, public health nursing, education, or some other field of public health representing the equivalent of at least one year of academic work in addition to the completion of a four years course leading to the Bachelor's Degree;

   y. or experience (normally not less than three years) in some field of public health practice or in teaching of a type acceptable to the school.

9. The length of the course shall be not less than one academic year of 32 weeks.

It is highly desirable that the candidate shall have had practical public health experience in the form of supervised field service or in a position involving the exercise of substantial initiative and responsibility. This experience should preferably be obtained prior to entrance into the school. In some schools, candidates not so equipped on entrance are required to complete three months of practical work in the field before receiving their degree.

10. The following courses are among those generally offered in schools of public health:

   a. Public Health Practice (Administration)
   b. Sanitation
   c. Microbiology
   d. Vital Statistics
   e. Epidemiology
   f. Physiological Hygiene
   g. Nutrition
   h. Public Health Nursing
   i. Health Education
   j. Social and Economic Factors Influencing Health (Economic Factors in Health)
   k. Mental Hygiene
   l. Public Health Law
   m. Industrial Hygiene
   n. School Health
   o. Maternal and Child Health
   p. Tuberculosis
   q. Venereal Disease
   r. Dental Health
   s. Hospital Administration

It is believed that it would be highly undesirable to make standard requirements with regard to any particular courses of instruction. It does seem important, however, that the student—at some point in the M.P.H. course, or prior to that course—shall receive instruction in the following basic fields:

A. *Basic Public Health Sciences*

   (1) The nature and functioning of the human organism, and the personal behavior which influences its well-being, including nutrition and mental hygiene.

   (2) The nature and behavior of various forms of parasitic life, including viruses; their interaction with the human body as demonstrated by clinical and immunological reactions; the modes in which such microörganisms are transferred from host to host in the course of their epidemiological history; and the ways in which such dissemination may be controlled.

   (3) The physical environment as it in-

fluences health, including not only the classical problems of environmental sanitation, but also those relating to housing and industrial hygiene.

(4) The social and economic factors which influence the health of the individual and of the community, and the influences of sickness on the social and economic status of the individual and the community.

(5) The nature and sources of quantitative information bearing on the health of the people, and its numerical presentation and analysis.

B. *Public Health Practices*

(6) The principles of applying the basic sciences listed above to community health and welfare. This involves the elements of sound public administration as applied to official and voluntary health agencies, including office management, budget making, personnel relations, and public health law; and includes also the wide field of public relations as influenced by health education and community education.

11. There must be opportunity for advanced specialization in one or more of the fields listed under 10 above or in such special fields as tuberculosis control, venereal disease control, or tropical medicine. There will be little time available in the M.P.H. year for advanced specialization; but basic work can be conducted effectively only in an atmosphere of advanced scholarship and with the essential stimulus which comes from the conduct of productive research by the faculty and advanced students.

CRITERIA FOR THE DR.P.H. DEGREE

12. Candidates to be matriculated for the degree of Dr.P.H. must be persons of demonstrated ability and promise of leadership. They must normally hold the degree of M.D.; although in exceptional cases, holders of other doctoral degrees, as in philosophy, engineering, or dentistry, may be accepted.

13. The candidate for the Dr.P.H. must complete—or must already have completed—basic courses equivalent to those required for the degree of M.P.H. by the university in which such student matriculates for the Dr.P.H.

14. The candidate, in addition to fulfilling criteria 12 and 13 must complete a minimum of one academic year of work in residence at the university involving advanced specialization in the particular area of public health for which the student is preparing. The total period of academic instruction in public health should be at least two years beyond that spent in acquiring previous doctoral degrees.

15. The candidate must demonstrate ability for leadership in his field, as well as for advancement of scientific knowledge. This must be indicated by successful professional experience in a post involving the exercise of substantial initiative and responsibility, preferably prior to admission.

16. The candidate must indicate capacity to make substantial contributions to the advancement of the science and art of public health by submitting a dissertation, *based on original research*, satisfactory to the authorities of the university.

Clearing House on Public Health Salary Information

WHAT THE READERS SAY

For obvious reasons the authors of the two communications that follow are not identified:

"The 'Statement by Executive Board on Salaries of Public Health Administrators' contained in the July issue is heartening. I hope it is receiving wide distribution. It seems to me it should be printed as a separate leaflet and be sent to state officials, newspapers, lay health organizations, etc., and should be made the basis of a real publicity campaign. The teachers received public support when their case was so presented. We are a much smaller group and are not able to make ourselves heard locally and, therefore, a national campaign is necessary if success is to be achieved.

"One point which I have not seen mentioned, and which I feel is of great importance follows. Many of us spent from 2 to 5 years in the armed forces. This is from 5 to 25 per cent of our professional life. Those who stayed on 'the home front,' many of them as young as myself, and others who were in the armed services, accrued seniority over us and also contributions toward retirement. All states should adopt an identical scheme for adjustment of this inequity which is nearly as important as the salary question. One need not know much economics to see that with the always somewhat low salaries in public health, those who have no private incomes are headed for a shabby old age if their retirement benefits are to be as much as 25 per cent less than the normal.

"In this connection, it should also be possible for an individual moving from one state to another to transfer not only his own contribution but the matching state contribution toward a retirement fund."

"In the supplement to the *American Journal of Public Health* for January, 1947, constituting the *Proceedings of the National Conference on Local Health Units*, Dr. Vaughan recommended that the salary of positions in public health 'should be commensurate with the income of other specialists in the medical field.' He also expressed the opinion that the professional person responsible for the administration of public health in a community is filling a position of importance equal to that of the superintendent of schools in the community and the compensation should be comparable. Dr. Vaughan stated that the Commissioner of Health of the City of Detroit receives an annual salary of $18,000. 'He is paid as much as the Superintendent of Education and more than the Mayor is paid, and he should be. He is a career man, a professional man. The educator and the public health officer should be the highest paid men in community life because they are devoting their whole time to this technical professional job.'

"In June of the present year, the Superintendent of Schools of the City of New York announced that applications were being accepted for the position of Director of the Bureau of Child Guidance. Among the qualifications stated were either 'a doctor's degree in the field of education' together with eight years of teaching, five of which must be in supervision, or a medical degree and license to practice in the State of New York together with five years of practice in psychiatry. (Further details of requirements are omitted for brevity.) The announcement said further, 'the present salary is $14,000 per annum.' The salary paid by the same city to the Director of a medical service in the Department of Health, as for example, Child Hygiene, Tuberculosis, or Social Hygiene is $7,500 plus the 'cost-of-living' bonus of $350.

"The Commissioner of Health of the City of New York receives an annual salary of $11,000 compared with $25,000 paid to the Superintendent of Schools. The Deputy Commissioners of the Department of Health are on the same salary level as the directors of the bureaus, that is, $7,500 per annum plus the $350 cost-of-living bonus. Needless to state, the salaries of other full-time physicians in the Department of Health are proportionally inadequate. District Health Officers, responsible for areas as large as one million

in population, receive $5,750 plus a cost-of-living bonus of $650. Assistant District Health Officers, most of whom are Acting District Health Officers, receive $4,500 plus $650.

"Perhaps the preceding is pertinent to the general problem of adjusting salaries to 1947 conditions. Let us have the indicated 'concerted attack on low salaries in public health.'"

Wilton L. Halverson, M.D., California State Health Officer, writes:

"I have noted with interest the section on Clearing House on Public Health Salary Information, in the *American Journal of Public Health*.

"California also has had a difficult time attracting medical and other technical and professional personnel to the public health field, due to inadequate salaries. This is true at both the state and local levels. Recently, there has been some upward adjustment in most of the state classifications and in many of the local areas there have also been general adjustments. Attached is a tabulation of salaries of medical, dental, and nursing personnel as of July 25, 1947.

"Conferences will be held with the staff of the Personnel Board within the next week in an attempt to adjust these salaries upward so that they will compare more favorably with the income of those in private practice, those employed in industry, or by other governmental agencies.

"In one rural county with a population of 170,000 the salary range of $6,000 to $9,600 has been established for the health officer, and in two of the larger cities, the salary of the health officer was raised to $12,400 and $13,500, respectively. Far too many salaries are still in the $5,000–$7,000 bracket and it is extremely difficult to recruit medical personnel under these conditions.

"Approximately 25 per cent of all the medical positions budgeted in the California State Department of Public Health are still vacant and unless substantial increases can be secured these positions will be filled very slowly."

Salary Scale — Medical, Dental, and Nursing Personnel, California State Health Department — July, 1947

Classification and Title	*Salary Range*
Medical	
Division Chief	$644–$676–$710–$745–$782
Asst. Chief, Division of Local Health Service	556– 584– 613– 644– 676
Asst. Chief, Division of Laboratories	481– 505– 530– 556– 584
Bureau Chief	556– 584– 613– 644– 676
Asst. Bureau Chief	530– 556– 584– 613– 644
Specialist Consultant	530– 556– 584– 613– 644
Chief Virologist	556– 584– 613– 644– 676
Roentgenologist	530– 556– 584– 613– 644
Public Health Medical Officer	
Grade 2	481– 505– 530– 556– 584
Grade 1	436– 458– 481– 505– 530
Medical Officer, Maternal and Child Health	436– 458– 481– 505– 530
Senior Epidemiologist	436– 458– 481– 505– 530
Dental	
Supervising Dentist	436– 458– 481– 505– 530
Supervisor of Dental Services	341– 358– 376– 395– 415
Nursing	
Specialist consultant	281– 295– 310– 325– 341
Public Health Nurse	243– 255– 268– 281– 295
Graduate Nurse	220– 231– 243– 255– 268

NOTE: Since this material went to press, word has been received that the range of salaries for the following grades of workers as of November 1, 1947, is: public health medical officer, Grade 1, $481–584, Grade 2, $530–644; bureau chief, $644–782; division chief, $710–862.

CURRENT PUBLIC HEALTH SALARIES IN SAN JOAQUIN COUNTY

Early in 1947, the San Joaquin Local Health District of California, comprising San Joaquin County and its contained cities, requested the aid of the Public Administration Service in setting salary scales for the workers in the health department. A new scale of salaries was adopted on July 1, 1947.

The District Health Officer, John J. Sippy, M.D., has furnished material for the table that follows, which shows the salary scales as recommended by Public Administration Service and as adopted effective July 1, 1947:

Salary Range and Steps by Type of Position
San Joaquin Local Health District
Recommended by Public Administration Service and Adopted July 1, 1947

Position	*Salary Range and Steps*				
District Health Officer					
Recommended	$600	$640	$680	$720	$760
Adopted	...	...	650	700	750
Assistant District Health Officer					
Recommended	475	510	545	580	615
Adopted	...	550	585	620	655
Public Health Nursing Director					
Recommended	300	315	330	345	360
Adopted	...	320	350	375	400
Public Health Nurses					
Recommended	235	250	265	280	
Adopted	245	260	275	290	
Junior Public Health Nurses					
Recommended	220	230			
Adopted	220	235			
Clinic Nurses					
Recommended	220	230	240		
Adopted	220	235	250		
Dental Hygienist					
Recommended	235	250	265	280	
Adopted	245	260	275	290	
Senior Laboratory Technician					
Recommended	270	285	300		
Adopted	270	285	300	315	
Laboratory Technician					
Recommended	235	250	265		
Adopted	245	260	275	290	
Laboratory Helper					
Recommended	165	175	185		
Adopted	165	175	185		
Public Health Engineer					
Recommended	400	420	440	460	
Adopted	400	420	440	460	
Senior Sanitarian					
Recommended	280	295	310	325	
Adopted	270	285	300	315	

(Cont.)

Salary Range and Steps by Type of Position
San Joaquin Local Health District

Recommended by Public Administration Service and Adopted July 1, 1947

Position	*Salary Range and Steps*			
Sanitarian				
Recommended	235	250	265	280
Adopted	245	260	275	290
Assistant Sanitarian (Sanitarian Aide)				
Recommended	210	220		
Adopted	210	220		
Chief Clerk				
Recommended	240	255	270	285
Adopted	245	260	275	290
Senior Clerk-Typist				
Recommended	210	220	230	240
Adopted	210	220	230	240
Clerk-Stenographer				
Recommended	185	195	205	
Adopted	185	195	205	
Clerk-Typist				
Recommended	175	185	195	
Adopted	175	185	195	
Clerk				
Recommended	175	185	195	
Adopted	165	175	185	
Custodian				
Recommended	185	195	205	
Adopted	185	195	205	

SALARIES OF LABORATORY PERSONNEL

The June Clearing House (p. 764) reported on a study of salaries of laboratory personnel under way by the Conference of State and Provincial Public Health Laboratory Directors. This study has now been completed and copies have been distributed. The study defines duties, analyzes qualifications and salaries of eight grades of laboratory workers: the director and the assistant director, four grades each of bacteriologists and chemists, and two grades of non-technical persons.

Information was received from 40 states, 2 territories, and the District of Columbia health departments. Of the 43, only Florida reported all of the 12 classified positions; only 3 other states reported as many as 10 classifications; 8 states reported 5 or fewer classifications.

In summarizing the study, the authors report such a wide variation in titles, qualifications, and duties that exact comparisons of salaries for comparable work were impossible. It is believed that, in general, however, the separate classifications shown "have essentially similar responsibilities in the various laboratories."

The lowest salaries paid to a laboratory director, ranging from $3,600 to $4,800 annually, was reported by Nevada; the highest by New York with a range of from $9,500 to $11,500. The

average lowest salary was $5,220; the average highest $6,384.

The average salary ranges for the 12 classifications are as follows:

Position	Number of States Reporting	Average Annual Salary Range
Laboratory Director	42	$5,220–$6,384
Assistant Director	19	4,152– 5,088
Principal Bacteriologist	13	4,080– 5,016
Associate Bacteriologist	38	3,192– 4,056
Senior Bacteriologist	34	2,544– 3,216
Junior Bacteriologist	37	2,148– 2,712
Principal Chemist	4	3,960– 5,124
Associate Chemist	14	3,636– 4,656
Senior Chemist	14	2,968– 3,588
Junior Chemist	9	2,244– 2,968
Laboratory Assistant	35	1,752– 2,268
Laboratory Helper	32	1,316– 1,824

The recommendations of the study are as follows:

1. That data presented in this report be made available to the salary study section of the American Public Health Association and that the conference coöperate in any way possible with the Association in an attempt to raise the qualifications and compensation of laboratory personnel.

2. That state laboratory directors use these data where suitable with their state directors of health and salary establishment agencies to encourage adjustments of salaries that are out of line and to improve qualification standards.

3. That state directors carefully study the possibilities for advanced training of laboratory personnel through the use of training stipends available from federal allotments to states.

4. That state laboratories participate more actively in providing an apprenticeship type of training to new recruits to the public health laboratory field.

Credit Lines

RIPPLES FROM THE PRINCETON CONFERENCE

The November *Journal* (p. 1502) described the Princeton Conference on Local Health Units in September. The Proceedings have now been published and sent to the agencies participating in the Conference and their delegates and to state health officers and directors of local health administration.

At the time of going to press, many activities flowing wholly or in part out of the Princeton Conference had already been reported. The National Congress of Parents and Teachers has indicated its support of federal legislation for grants-in-aid specifically for the development of local health services based on a plan for complete coverage of the states.

The Conference has been reported on or discussed editorially in the *Journal of the American Medical Association*, *Mental Hygiene*, *Journal of Social Hygiene*, *Public Health Nursing*, and the *Journal of the American Dental Association*. The November *News Letter* of the Massachusetts Department of Health summarizes the main facts brought out by the Conference, thus assuring wide circulation of the findings throughout Massachusetts.

Richard F. Boyd, M.D., Director of Local Health Administration of the Illinois State Health Department, who served as a discussion leader at the Conference, prepared a full summary of the Conference for distribution among the bureau chiefs of his department.

Mrs. M. A. Vreeland, Acting Health Chairman of the New Jersey League of Women Voters, prepared a summary for the New Jersey Leagues which has been shared with the participants in the Princeton Conference. The New Jersey League plans to ask that the National League put encouragement of local health units on its study program for the coming year.

Allen Yankauer, M.D., of the New York City Health Department, who represented the American Veterans' Committee, has prepared a report with recommendations for his organization. Lee A. Rademaker, M.D., of Lions International, prepared a two part article with recommendations for the October and December issues of *The Lion*, the organ of the club. The Lions also celebrated their 30th anniversary the week of October 26, by stressing child health and the development of community health service through radio programs and other means of reaching the public.

The *Survey Mid-Monthly* for October, in its department called "The Common Welfare" had a two column article on the Conference entitled "Courage, Well Documented." It says in part:

> If one phrase could synthesize the spirit of those who assembled on the Princeton Campus last month, the above might do it. For the purpose was no less than to give impetus to a movement to reorganize part of our complex but deeply embedded local governmental structure in the interests of adequate public health service for every person in the United States.
>
> Moreover, no one proposed that this be done through the device of a federal plan launched and subsidized from Washington. The assumption throughout was that the necessary consolidation of local administrative units, and the extension of service to areas now uncovered, must come as the result of education and persuasion at the grass roots, by the independent action of city councils, county commissioners, and state legislatures. There seemed, it may not be irrelevant to report, no lack of faith in the possibility of ultimate progress by this slow and democratic method.
>
> The more than 100 delegates were a well

chosen mixture of professional experts and lay leaders from upwards of seventy organizations with vast resources to inform and mold public opinion. Delegates from such groups as the American Farm Bureau Federation, the U. S. Chamber of Commerce, the National CIO and AFL, International Rotary and Kiwanis, and the National Congress of Parents and Teachers, joined with those from many national voluntary agencies in the field of health to represent more than 50,000 organized local groups. For two days everyone drew courage and inspiration from an abundant and convincing documentation of need, tested standards of administration, proved methods of enlisting public interest.

This is an impressive story of results from what the *Survey* article indicated as the resolution of the delegates "to go back and put their varied organizational wheels in motion toward a common goal of adequate public health service for everybody." The extent of activities is even more impressive when it is remembered that the above does not constitute a complete census of action taken; it represents merely what has come to the attention of Credit Lines editors.

FRENCH NATIONAL BLOOD TRANFUSION CENTER

The launching of the American Red Cross Blood Plasma Program gives point to a recent description of the French Blood Transfusion Center received from the French Information Service. This reports that the French National Blood Transfusion Center in Paris, organized in 1923, is the first of its kind ever organized.

The present headquarters of the Center are in the Hospital St. Antoine where approximately 100 person-to-person transfusions are given every day. In addition, a hundred jars of dried plasma and 14 quarts of preserved blood are prepared daily.

The Center also trains transfusionists. Several of the 13 regional blood transfusion centers planned for the French provinces have already been set up.

French Army Laboratories transform blood taken from donors into plasma. Through the coöperation of the French Army also, it is possible to maintain throughout France the special life preservation squads that were created during the war. These teams function in all hospitals that receive serious accident cases or sick persons suffering from severe hemorrhages.

The Center is also carrying on research along several lines of study suggested by the discovery of the Rh factor and its influence on blood diseases.

STAFF ESPRIT DE CORPS

Under the title "You Are the Health Department" and subtitled "You'll Want To Know," the Illinois State Health Department has prepared an attractive pamphlet to put into the hands of all its employees. It starts with a letter of welcome from the Health Commissioner, Roland R. Cross, M.D., and ends with a list of classified positions and salary ranges in the department.

In between these two items, it manages in some 50 pages to give a thumbnail sketch of what each department does, what policies are with respect to service ratings, promotions, vacations, working hours, etc.

The pamphlet is printed in red, yellow, and black with breezy line drawings in red that tell more than words. Such a pamphlet ought to have distinct advantages over learning about your own office the hard way—by word of mouth and often from the wrong source and with the wrong facts.

PARENT-TEACHERS AND HEALTH

The June *Bulletin* of the Kentucky Department of Health is the Parent-Teacher Number and is sponsored by the Kentucky Congress of Parents and Teachers. Included is the message of the National Congress President, Mrs. L. W. Hughes. Health is one of the four points of the National Congress program and Mrs. Hughes's first sug-

gestion is "to coöperate in every possible way with public health departments to intensify and expand present local health services and facilities."

HEALTH EDUCATION TESTIMONY

The High School Journal, published at the University of North Carolina and now in its 30th year, had a special issue on Health Educators at Work, in May, 1947. Its guest editors, Lucy S. Morgan, Professor of Public Health Education in the University of North Carolina School of Public Health, and three other North Carolina health educators, produced a round-up of significant health education activities going on not only in their own state but in many parts of the United States, as well as in Canada and Puerto Rico. Study and Action for Community Health, Everybody Helps, and Programs Begin with People are some of the intriguing titles and the authors sound like a Who's Who of Health Education.

High School Journal, Box 810, Chapel Hill, N. C.

ABOUT ANNUAL REPORTS

The October *Ohio State Medical Journal* editorializes about local health department reports to the effect that "fewer figures, more zip and imagination are needed." It suggests that many advances have been made in public health services in Ohio in 40, 20, or even 10 years. It also observes that if the local health officer would only tell about these things in a form John Q. Public can understand, there might be less penny-pinching in setting up the health department budget. This is not new but it bears repeating many times in many places.

COMMUNITY WAR SERVICES—1941–1946

Community War Services already sounds like an echo out of the past but the final report of the Office of Community War Services entitled, "Teamwork in Community Services, 1941-1946," reports on a demonstration in federal, state, and local coöperation that has significance for many areas of peacetime coöperation by the three levels of government. The printing, paper, and illustrations make the report worth examining and its report of the social protection, day care centers for children, national nutrition, and other programs may be of interest to public health workers.

Available from the Federal Security Agency, Washington 25, D. C.

THE CHILDREN'S BUREAU REPORTS ON CHILDREN

The Children's Bureau, in line with the authority to "investigate and report on all matters pertaining to the welfare of children and child life among all classes of people," granted when it was created in 1912, prepares a clip-sheet called "Our Nation's Children" for the use of editors. The August, 1947, issue is of particular interest. It tells in conversational style the story of the San Francisco Survey of Child Care Centers and why they are still needed in spite of the reduction in war production needs. It reports on various projects throughout the country that have been set up through the use of federal funds and, finally, an article entitled "In Defense of Parents."

Any material from this clip-sheet may be used for reproduction in whole or in part. It is available without charge from the Federal Security Agency, U. S. Children's Bureau, Washington 25, D. C.

RAT CONTROL PROGRAM FOLLOWS HOUSING STUDY IN ST. LOUIS

The St. Louis Health Department and City Planning Commission recently completed a housing and neighborhood study of the city based upon two sample neighborhoods and using the techniques recommended in the *Appraisal Form for Measuring the Quality of Housing* of

the American Public Health Association. Following the Survey, which found more than 43 per cent of dwellings in one neighborhood rat-infested, and as high as 100 per cent in some blocks, the Rat Control Division undertook a building-by-building inspection and enforcement program. The housing study showed that general unsanitary conditions rather than age of the buildings were the chief factors in rat infestation.

The *Rat Controller*, which reports these activities, does not lose sight of the world food significance of a rat control program. It reports one congressman's suggestion for a rat-killing week as a means of saving grain.

WHAT DO YOU KNOW ABOUT BROMINE?

The October, 1947, issue of *The New Swimmin' Hole*, published by the Division of Sanitary Engineering, Illinois State Department of Health, is devoted to a consideration of the use of bromine in the treatment of swimming pool waters. The present policy of the Illinois State Department of Health, which includes approval of bromination for the disinfection of swimming pool waters, is outlined, and considerable space is given over to tabulation of answers to specific questions concerning the use of bromine submitted by 44 swimming pool operators in the state of Illinois. Available from C. W. Klassen, Chief Sanitary Engineer, Illinois State Health Department, Springfield.

SARATOGA COUNTY SURVEYS ITSELF

Saratoga County, New York, with a population of nearly 70,000, has been surveying itself. The point of departure for the survey was the wish of the County Tuberculosis and Health Association to plan its own future program. That the official health agency is the keystone in a community health program is well indicated by the fact that the first summary recommendation is that "steps should be taken to consolidate all public health governmental services including those of the cities into a single county health department under direction of a county commissioner of health who shall give his full time to the position."

The first chapter, following the description of demographic and other data in Saratoga County, is on the official public health organization. In this analysis is shown how the existing city, town, county, and village health organizations—part-time and full-time—are costing in total, several thousand dollars more than a well organized, properly staffed single county health department would and that in terms of funds paid by the county, there would also be a saving of several thousand dollars.

With respect to voluntary agencies, the organization of a county health council involving all the various voluntary and official health agencies in the planning of county health activities is recommended.

Such a survey represents one possible useful tool in focusing community attention on the need for a consolidated official health department.

Prepared by Gertrude E. Hodgman, R.N., M.A., *A Public Health Survey of Saratoga County, N. Y.—1945–1946* is available from the Saratoga County Tuberculosis and Public Health Association, Saratoga Springs, N. Y. Price, $1.25.

KANSAS KNOWS ITS ACCIDENTAL DEATH SCORE

The *Kansas Accidental Death Report* (the 15th annual), published by the State Board of Health, maintains the high production standards the department has set itself. The paper, printing, color charts, and format are all so good that one looks and browses, and perchance studies.

There is now no reason why any citizen of Kansas should fail to know

just how the 1,300 to 1,500 accidental deaths a year happen and thus what preventive measures should be taken. That these measures have not yet been taken is evidenced by the statement of the report, "The pattern of accident mortality occurs with astonishing regularity from one year to another so that this year's or the next year's accidental death picture may be predicted with relative accuracy simply by examination of statistics of preceding years."

For future statistical reports of this type, some of the detail might well be omitted in favor of showing the Kansas situation in relation to that of neighboring states and of the country as a whole.

SHARING THE ANNUAL MEETING WITH THE COMMUNITY

Stamford's Health, the monthly bulletin of the Stamford (Conn.) Health Department, in "Seventy-Five Years of Public Health," summarizes the high points of the 75th Annual Meeting of the American Public Health Association in Atlantic City in October. In bright informal language, the delegate (he remains anonymous) tells his staff and his community what he saw and heard. It is an interesting illustration of bringing your experiences to the man in the street. One would suppose that Stamford citizens as a consequence feel a personal part of public health's 75 years.

PEOPLE'S HEALTH, A NEW INDIAN PUBLICATION

Volume I of *People's Health*, published by A. V. Raman in Madras, India, completed its first year with the September, 1947, issue. Its announced aim is "to serve as a clearing house for scientific and up-to-date knowledge pertaining to national health, and as an authoritative and fruitful forum for the discussion of ideas and plans related to it." Printed in English, it draws heavily upon English and American books and journals, more particularly the *American Journal of Public Health*.

A NEW BRITISH JOURNAL OF SCIENCE

In October, 1947, appeared the first volume of *Research*, a new British monthly scientific journal. Its aim is to "cover the wide field of general scientific research and particularly its application in the general development of industry." Among its Scientific Advisory Board of seven members is Sir Alexander Fleming, Professor of Bacteriology, University of London.

Available in the United States from Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, at $10 per year.

MAGAZINE FOR THE NATION'S HANDICAPPED

July, 1947, saw the birth of *Handicap*, the News Magazine for the Nation's Handicapped. It hopes to keep the handicapped, the legislator, and the public all informed on activities in the field of rehabilitating the handicapped with special attention—adverse—to the exploiter and publicity hound, and—favorable—to the good products and honest organizations.

Among the items in the first issue is the story of Harold Russell, the handless veteran who has won two Academy Awards for his acting in "The Best Years of Our Lives."

The Editor is William H. Bayne, Jr. The publication office is at 1017–15th Street, N. W., Washington 9, D. C., and the annual subscription rate is $3.00.

A NEW TUBERCULOSIS FILM

The National Tuberculosis Association's recent motion picture, "Time Out!" is aimed particularly at tuberculosis patients and their families. Nowadays, movies and filmstrips can be shown to ambulant patients, clinic patients, and, where special equipment is provided, to selected bed patients—

with the physician's approval, of course. Family groups can be reached through the visiting nurse, at clinics, or during visiting hours at institutions.

The visual Aids Unit, of which this is a part, includes: *Me vs TB*, a film strip; *The Winner!*, an audience guide; and a descriptive circular. It carries sufficient dramatic appeal and educational content to hold the interest of any audience. The cast includes notable Hollywood and Broadway talent. Extreme care was given to detail in filming this story of one man's problem and how he finally overcame it.

Can be ordered from state and local tuberculosis associations.

WORTH ACQUIRING

State Planning for Participation in the National Mental Health Act is an outline of the responsibility of the individual state health department in developing a nation-wide mental health program, by the Chief of the Mental Hygiene Division of the U. S. Public Health Service, R. H. Felix, M.D. He points out that the passage of the National Mental Health Act presents an opportunity to cope on a nation-wide scale with one of the major public health problems, mental illness.

Published in *Public Health Reports*, Vol. 62, No. 33 (Aug. 15), 1947, and available from the U. S. Public Health Service, Washington 25, D. C.

Guide for Public Health Nurses No. 2 —Syphilis—This revision of the Family Health Series of the Community Service Society of New York provides accurate up-to-date information regarding syphilis for the use of nurses doing family health work. Available from the Community Service Society of New York, Department of Educational Nursing, 105 East 22nd St., New York 10, at 10 cents plus postage for fewer than 100; 8 cents plus postage for 100 or more.

Health Centers Under the Hospital Construction Act—Prepared for the Council on Medical Service by Dean F. Smiley, M.D., Consultant in Health and Physical Fitness, Bureau of Health Education, of the American Medical Association, this outlines what health center facilities might well be included in hospital construction being carried on under the terms of the Hill-Burton Hospital Construction Act.

Reprinted from the *Journal of the American Medical Association*, Aug. 2, 1947, and available from the offices of the *Journal* at 535 North Dearborn Street, Chicago.

Along the same lines, the Division of Hospital Facilities of the U. S. Public Health Service has put out a series of pamphlets as aids in understanding and utilizing the Hospital Construction Act. They are *Why We Need More Hospitals, Hospital Quiz* (which answers 24 questions, the last of which is What Can I Do to Promote Better Hospital Care for My Community?), *What Is a Hospital System?* and *Hospital Survey and Construction Program Law and Regulations*.

Available from the Division of Hospital Facilities, U. S. Public Health Service, Washington 25, D. C.

Health Educational Services—prepared by the Connecticut State Department of Health. This is a list of films, slide films, recordings, and exhibits available from the department. It is a good illustration of a compact listing of the health education material available to local health departments from the state health department.

The pamphlet does not indicate whether requests from other states will be filled or at what cost. Connecticut State Department of Health, Bureau of Public Health Information, P. O., Station A, Box K, Hartford.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.

Accident Prevention Manual for Industrial Operations—*Chicago: National Safety Council,* 1946. 534 pp. Price, $14.00 ($7.00 to members of N.S.C.).

This compact manual is a valuable reference for all plant managers, safety personnel, and industrial hygienists. The book is divided into 14 chapters covering various phases of safety and industrial hygiene. The first chapter discusses the important subject of preplanning for safe and hygienic conditions, a subject which deserves more attention than it now receives in modern plant design. General factors, space requirements, personnel service facilities, machine layout, exhaust ventilation, and other factors are outlined. This section includes tables and illustrations of desirable arrangements in plant layouts.

The second chapter deals with safety precautions necessary in construction and demolition work. This section is very well illustrated with proper methods for providing, hazard-free conditions during construction. Chapter 3 discusses safety precautions necessary for permanent equipment and facilities such as elevators, plant railways, boilers, and pressure vessels. The next chapter discusses guarding and operating machinery of all types from metalworking machines to miscellaneous machinery such as textile and refrigerating equipment.

Safe operation during material handling and storage are covered completely with very good illustrations. Electrical hazards, chemical hazards, fire and explosive hazards are each discussed in separate chapters. The use of hand and portable power tools is the subject of another well outlined chapter.

The remainder of the manual deals with accident records, personal protective equipment, industrial hygiene and safety organization.

This manual is written in clear, concise form and will be an excellent addition to public health men interested in industrial hygiene and safety. To the newcomer to these fields it presents an excellent outline of fundamental information. LESLIE SILVERMAN

Advances in Pediatrics, Vol. II—*By S. Z. Levine, Allan M. Butler, L. Emmett Holt, Jr., and A. Ashley Weech. New York: Intersciene,* 1947. 409 pp. Price, $6.75.

This volume presents a well chosen selection of subjects of contemporary interest and importance. It is not to be confused with other annual or quarterly publications which give in abstract form a review of significant contributions covering the whole field of pediatrics. This is a collection of monographs, each by a different contributor who is an authority in his field. The following eleven subjects are included: Etiology of Congenital Malformations, Acute Infectious Lymphocytosis, Role of Fluorine in Prevention and Treatment of Dental Caries, the Treatment of Purulent Meningitides, Chemotherapy, Atypical Pneumonia, Endocrine and Other Factors Determining the Growth of Children, Virus Diarrhea, Prematurity, the Genesis of Physiologic Hyperbilirubinemia, and Prevention of Recurrences of Rheumatic Fever.

To pick out any of these monographs for special comment is difficult since all are comprehensive, authorative, and include much that is new. However, the scope which the editors apparently intend to maintain is indicated by a full and timely discussion of the treatment and prevention of dental caries, "a

disease which shares with the common cold the dubious honor of being probably the most prevalent disease of civilized man," and a subject much neglected by pediatricians. The series, of which this is the second volume, promises to supply a reliable and informative review of the advances in pediatrics which should be of real value to both pediatrician and general practitioner. JOHN P. HUBBARD

Biological Symposia, Vol. XII: Estimation of the Vitamins—*Edited by W. J. Dann and G. Howard Satterfield. Lancaster, Pa.: Jaques Cattell Press*, 1947. 531 pp. Price, $6.50.

This book, intended to serve as a guide for workers in biochemistry, nutrition, food research, and related fields involving vitamin analyses, presents biological, microbiological and physiochemical methods of assay prepared by appropriately qualified authorities. A variety of methods are discussed and the authors' recommended procedures are described in detail. Ascorbic acid, thiamine, riboflavin, nicotinic acid and derivatives, vitamin B_6, pantothenic acid, inositol, biotin, vitamin M, *L. casei* factor, choline and vitamins A, D, E, and K are considered. A procedure for the determination of the physiological availability of some of the water-soluble vitamins by human assay is included. Some chapters contain more thorough evaluations and details than others. It is regrettable that the need for an improved vitamin A reference standard and basal diet is omitted, although adoption of a new standard and bioassay diet has been proposed. A limitation also is the meager consideration given to the assay of foods, particularly heat-treated and stored products, and the complexities encountered therein. Minor inaccuracies, as inconsistency in spelling "thiamine" occur. In general, the text, one of the first of its kind, fills a need and will be useful both to the advanced and inexperienced worker.

ELSA ORENT-KEILES

School Health and Health Education—*By C. E. Turner, D.Sc., Dr.P.H. St. Louis: Mosby*, 1947. 457 pp. Price, $3.50.

During the last few years increased attention has been given to the preparation which all teachers should have in the field of school health and health education. This book is designed to meet the needs of teachers in training as well as teachers who are in service and wish information regarding the school health program. The book meets these needs. Instructors of health education in teachers' colleges and universities will find *School Health and Health Education* a valuable textbook for their introductory courses in school health. An earlier volume by the same author, *Principles of Health Education*, forms the basis for some of the discussion. However, the present volume is much expanded over the earlier one and treats the subject more completely.

The book is divided into twenty-one chapters and a bibliography. It seems to the reviewer that every aspect of the school health program has been touched upon by the author and his collaborators.

Community groups will find the volume a helpful reference when they study the school health program, and so will teachers and school administrators. Through increased understanding should come a desire to support measures which will be reflected in improved facilities for children. S. S. LIPSON

The Causation of Appendicitis—*By A. Rendle Short, M.D., Baltimore: Williams & Wilkins*, 1946. 79 pp. Price, $2.50.

The author discusses briefly the history of appendicitis as a clinical entity; its more recent history in the British Isles; its incidence, where

known, in the various nations and islands of the world and he philosophizes as to its cause.

He suggests that the substitution in modern times of steel rollers for the stones of olden times used in milling wheat or other grains for flour may be the cause. Modern methods produce a refined product from which many of the ingredients of the whole grain flour, formerly present, have been removed with adverse effect upon the gastro-intestinal tract and an increase in the incidence of appendicitis. He hypothesizes that modern diet may lack sufficient cellulose, be too fluid, and probably some necessary cellulose-linked vitamin has been removed from it. This results in the much higher morbidity rates of appendicitis, a disease only recently become significant.

The book adds nothing to present American literature on the subject.

ALBERT G. BOWER

Children in the Community. The St. Paul Experiment in Child Welfare—*By Sybil A. Stone, Elsa Castendyck, and Harold B. Hanson, M.D. Washington: Gov. Ptg. Office,* 1946. 182 pp. Price, $.35.

This is a report of an ambitious project in St. Paul which provided an intensive service in a limited area to children showing difficulties of behavior and adjustment. Objectives were to study the problems of identification and treatment of such children; of development and integration of agencies and organizations concerned with children and of interpreting to the community its needs in services to children.

The report does not pretend to have found all the answers, but it is clear that the roles played by the schools and law enforcement agencies both in detection and therapy could be increased tremendously. As happens so often with demonstration projects, extension to the rest of the community was affected by less concentrated resources in the rest of the city and inability to make generally available service comparable to that of a unit of highly skilled workers. A Committee for the Coordination of Schools and Social Agencies was one outcome which did fill part of the need, although it is sad to relate that a change in school administration sharply curtailed the schools' participation in the Coordination Center.

As the concept of child health broadens, health agency staff members will find these problems to be of more and more concern to them. Study of this report, which makes free use of illustrative case material, will be fruitful.

MYRON E. WEGMAN

Duncan of Liverpool—*By W. M. Frazier, M.D. London: Hamish Hamilton Medical Books,* 1947. 163 pp. Price, 8s. 6d.

To all of our readers interested in the historical background of public health, we recommend this little book which has recently been issued in England on the One-hundredth Anniversary of the appointment of W. H. Duncan as Medical Officer of Health of Liverpool.

As a private practitioner, Duncan had been deeply impressed with the appalling insanitary conditions existing in the city and in 1846 prepared a pamphlet, *The Physical Causes of the High Rate of Mortality in Liverpool,* which aroused wide interest in the municipality. This was four years after the appearance of Chadwick's famous report to the Poor Law Commission. The local evidence presented by Duncan led to prompt action, and as has so often been the case, the contention of G. C. Whipple that "epidemics may serve as life-savers" was verified. In the same year, the Town Council of Liverpool secured the passage of an act providing for a "Medical Officer of Health," apparently the first time this phrase had been used. It is of interest to note that Duncan was

appointed in January, 1847, on part time at a salary of three hundred pounds a year. The inadequacy of this salary was commented upon in a sarcastic manner in the columns of *Punch*, and in 1848 Duncan's appointment was made on full time at seven hundred and fifty pounds.

The housing conditions in Liverpool were among the worst to be found anywhere in England. Some eighty or ninety thousand persons were housed in "pestiferous cul-de-sac courts" and some thirty or forty thousand persons were living in 8,000 cellar dwellings. General sanitary conditions were equally atrocious and Dr. Duncan was fortunate in having throughout his career the cooperation and support of James Newlands, occupying essentially the position of City Engineer.

Duncan had to cope with widespread epidemics of cholera in 1849 and again in 1854, introduced by masses of Irish laborers who poured into the city after the potato famine. He was of course a miasmatist, although it is interesting to note that he recognized the danger of contagion to those handling the dead or the excreta from the living patient. Single-handed, he carried on house-to-house investigation for the control of the disease, with considerable opposition from the Medical Relief Committee which questioned the right of the health officer even to point out to the committee desirable curative procedures.

Duncan coped with all these difficulties with extraordinary vigor and courage. The first medical officer of health ever appointed in Great Britain, he served from 1847 to 1863. By the application of the basic principles of sanitation he succeeded in remarkable degree in reducing the mortality rates of the city to a point where they no longer stood out as the most appalling example to be found in the Kingdom. He was one of the great pioneer sanitary reformers whose work, as one authority pointed out, was largely completed by the end of the 19th century so that "Liverpool and the majority of the larger towns have reached relatively satisfactory standards of communal cleanliness." It was this movement which laid the foundation for the advances to be made in the 1900's. As Dr. Frazier points out, in our recent progress, "perhaps the most important of these steps—and there were many of them—were housing, education, personal hygiene, national health insurance, and the general improvement of the standards of living." Without the foundations of the 19th century, the structure of 20th century public health could not have been built.

C.-E. A. WINSLOW

Cineplasty—*By Henry H. Kessler, M.D., Ph.D. Springfield, Ill.: Thomas*, 1947. 201 pp. 314 ill. Price, $6.75.

As a result of the war experience, there is new hope for America's disabled, especially the amputee. Since amputation is a visible and dramatic type of disability, there has been an unusual interest in this particular group.

A research program that has expanded many times under the auspices of the Committee on Prosthetic Devices of the National Research Council has already made many significant improvements in prosthetic devices.

Dr. Henry H. Kessler has made a real contribution to the program for the amputee. In his exceptionally well illustrated book he goes exhaustively into the complex functions of the upper extremity, evolution, mechanics, and physiology. Following his introduction there is a detailed chapter on mechanical devices, then an extensive treatise on cineplasty—its history, physiological and anatomical problems, surgical techniques, followed by a section on special cineplastic prosthetic devices. In addition there is an excellent chapter on plastic procedures designed to produce

the maximum function in deformed hands.

The final chapter, a summary of rehabilitation procedures, forcibly points out the necessity for training, physiological and psychological adjustment, vocational guidance, selective placement, and vocational training as an integral part of therapy.

Dr. Kessler is eminently qualified to write authoritatively on the subject of the amputee because of his more than 20 years' experience as a member of the New Jersey Rehabilitation Commission, his war experience as Chief of the Naval Amputation Center, Mare Island, Calif., and because of his deep and consuming interest in the disabled.

Cineplasty will add to the technical knowledge of the surgeon; it will give increased and clear insight to the amputee, and will also be of invaluable aid to better understanding for every rehabilitation worker.

HOWARD A. RUSK

Food and Health—*By Henry C. Sherman (new ed.), New York: Macmillan,* 1947, 290 pp., Price $4.00.

Dr. Sherman has rewritten the 1934 edition and added a chapter on "How Foods Affect Health and Efficiency Through Nutrition."

In the words of the author "Here is concisely summarized the how-and-why of higher health and longer life for the individual reader, through wiser use of food."

The book contains tweny-four chapters and an appendix which includes the National Research Council's recommended Dietary Allowances, a table of Nutritive Values of Typical Foods, a table of Nutritional Calories in Foods, and three series of actual meals which illustrate the principals explained in the text of the book.

The author summarizes the present-day science of nutrition in terms of six "pillar concepts," namely, (1) energy aspect, (2) proteins and amino-acids, (3) mineral elements, (4) vitamins, (5) interrelations among these different facts, and (6) . . . nutritional reactions of the living body as a coördinated whole. These six concepts are discussed in non-technical terms and in a style that will hold the interest of scientifically trained workers and the average lay person.

The chapter on "Digestion" is an excellent non-technical statement.

The chapter on "Nutritional Improvement of Life" deals with such topics as "nutrition and brain workers," "nutrition and more efficiency after fifty," and "nutrition in relation to disease and health."

Public health workers will welcome this book because it states how the newer knowledge of nutrition can "enhance vitality and efficiency even in people who were already healthy and efficient." ALICE H. SMITH

Occupational Diseases of the Skin—*By Louis Schwartz, M.D., Louis Tulipan, M.D., and Samuel M. Peck, M.D. (2nd ed.) Philadelphia: Lea & Febiger,* 1947, 964 pp. Price, $12.50.

Continuing to answer the need for an authoritative source of information in industrial dermatology a second edition has appeared of this now accepted *vade mecum* of the physician in occupational health. Written by three dermatologists whose wartime experiences took them into innumerable manufacturing establishments for the purpose of identifying skin irritants, one finds in a single volume a rich lore of material gained from personnel case studies and from a detailed study of the pertinent literature.

Since the first edition in 1943, one finds that "The new chemicals and new methods of manufacture which are so rapidly and constantly being evolved, bring with them new skin hazards to workers engaged in their manufacture

and in their application, as well as to the public who use products containing these chemicals." This has necessitated a thorough revision which has seen an addition of 165 pages, and 2 new chapters on "Occupational Acne" and "Medico-Legal Aspects of Occupational Dermatitis." Considerable new material has been added on the use of the patch test, methods of prevention of dermatoses, cutting-oil dermatitis from wearing apparel, and the skin effects of certain new explosives. Likewise, of the specific occupations discussed from the point of view of skin hazards, 114 are analyzed, in comparison with the 74 of the first edition.

Particular points of value are seen primarily in the excellent and unabridged documentation in the form of the end-of-the chapter bibliographies. Frequent comprehensive lists, such as "Substances used in Patch Testing," "Occupational Stigmata from Physical and Mechanical Causes," and "Trade Names of Synthetic Resins," among others, are invaluable guides in the cause establishment of the work-connected dermatosis. The descriptions of the industrial processes producing the skin lesions paint the occupational background so that the reader will understand the reason for the acquisition of the disease. The authors stress prevention, and outline with clarity the prevention armamentarium. Treatment for the industrial dermatoses is given both in general, and for certain conditions, in detail.

The general typography and tabular arrangements are good, but the black and white illustrations, although numerous (146), are not comparably executed, for the contrasting details needed in differential diagnosis by the non-dermatologist are lacking. Colored plates in this quantity are obviously prohibitive.

The book is recommended particularly for the industrial physician, and because of its discussions of prevention and of the subject's medicolegal aspects, to the safety engineer, and insurance carrier. With the appearance of this work a standard text of high reputation is added to the library of the rapidly expanding field of occupational medicine.

JEAN SPENCER FELTON

The Road to School Health. Guides for Better School Health, Bulletin No. 1—*Madison: Wisconsin Cooperative School Health Program*, 1947. 20 pp.

The Road to School Health, sponsored by the Wisconsin State School Health Council, is an attractive pictorial bulletin, which has for its purpose broadening the understanding of the school program. It is written especially for administrators and school boards, with implications for all concerned with the health of children and those who should share in making a better program. The bulletin is an experiment to popularize some of the professionally written material on school health. After reading, one gathers it is a publication of the State Department of Education, although it is not thus clearly stated.

JEAN V. LATIMER

Careers for Nurses—*By Dorothy Deming, R.N. New York: McGraw-Hill*, 1947. 358 pp. Illus. Price, $3.50.

Expanding opportunities in nursing make this practical and readable outline of vocational opportunities particularly timely.

Job opportunities in the various branches of nursing are discussed informally, with a wealth of detail about conditions and satisfactions of work, usual compensation, and necessary personal and professional qualifications. Of particular value are the job descriptions written by 18 nurses who are actively engaged in the several nursing fields. First level, as well as "top" positions, are given the dignity and attention they deserve.

This book should be a valuable guide for students and graduate nurses who are choosing a special field of interest in nursing. Counselors and teachers in education and in schools of nursing will welcome it as a helpful source of information for student guidance.

RUTH B. FREEMAN

Ethics—With Special Application to the Nursing Profession — *By Joseph B. McAllister, S.S., Ph.D. Philadelphia: Saunders,* 1947, 442 pp. Price, $2.75.

This amazingly clear book written as a text for the professional nurse, enables one to understand the basic principles behind morality. It is a scientific, comprehensive, well planned approach to the study of ethics. The text is divided into two major parts. Part I deals with ethics in general, while Part II treats of specific ethical problems associated with nursing. The mechanical arrangement of the volume facilitates ready reference, thus enhancing its value as a textbook.

The author's application of principles to daily living are vividly illustrated, leaving no uncertainty in regard to the moral issues involved for Catholic and non-Catholic alike. His exposition on sex, marriage, the family and the child has all the delicacy and grace of finely executed art.

While illustrations are drawn largely from problems associated with care of the sick, its sphere of influence as a text goes far beyond the immediate environment of the sick room. The classroom teacher, administrator, supervisor, and consultant in the hospital, in public health, or industry, as well as the nurse in private practice will find herein a rich education in correct ethical principles. It is, in its entirety, a guide to action based on sound reasoning and should receive a warm welcome in a world filled with tensions and uncertainties.

WINIFRED DEVLIN

Dust and Its Effects on the Respiratory System—*By George H. Gill. London: H. K. Lewis,* 1947. 47 pp. Price, 5s. net.

This small text is presented in an informal manner for persons interested in industrial hygiene. Written like a handbook, it affords a yardstick for measuring the relative importance of various types of dust, and a foundation upon which to build a more thorough knowledge of the dust problem. One-fourth of the text is devoted to dust sampling methods and their limitations. It is useful to those desirous of obtaining an overall picture of dust control from the medical, chemical, and engineering viewpoints. It accomplishes the author's intention of presenting the material in a simplified form for those with a limited technical background. It is easy reading, and extensively indexed. Attention is called to dusts requiring additional study for better appraisal of health hazards involved.

ROY M. SEIDEMAN

A Manual of the Common Contagious Diseases—*By Philip Moen Stimson. (4th ed.) Philadelphia: Lea & Febiger,* 1947. 503 pp. Price, $4.00.

This is the fourth edition of a book which has become well accepted as a standard reliable text on the clinical aspects of contagious diseases. As in former editions the author confines himself to a few diseases—diphtheria, Vincent's angina, scarlet fever, measles, rubella, pertussis, mumps, chickenpox, smallpox, meningococcus meningitis, and poliomyelitis. Though the emphasis is placed on the clinical aspects, brief attention is given to epidemiology and control measures.

The new edition has been enriched by an excellent chapter on sulfonamides and the antibiotics. Much new material has been inserted throughout the volume and the chapter on poliomyelitis largely rewritten. The controversial topic of

the Kenny methods has been discussed from a highly objective middle ground which the author acknowledges presents "much that is in line with Miss Kenny's methods of treatment and a great deal that is not."

The last chapter dealing with the General Management of Contagious Diseases is written from the standpoint of the hospital and a fairly select home practice. The recommendations for control of diseases in schools are those from private boarding or day schools. The health officer and public health nurse will find many of them of limited applicability to public schools or to average home situations.

The new edition is well printed, richly illustrated with photographs and diagrams. It is a convenient and rich source of authoritative and up-to-date information, of value to all health departments.

GAYLORD W. ANDERSON

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

BLUE CROSS AND MEDICAL SERVICE PLANS. By Louis S. Reed. Washington, D. C.: Federal Security Agency, U. S. Public Health Service, 1947. 323 pp.

THE CEREBRAL PALSIED CHILD AND HIS CARE IN THE HOME. By Viola E. Cardwell, R.N. New York: Association for the Aid of Crippled Children, 1947. 196 pp. Price, $1.00.

THE CONTROL OF WHOOPING COUGH IN NEW JERSEY. Prepared by Bureau of Preventable Diseases. New Jersey: State Department of Health, 1947. 31 pp.

DIRECTORY OF CONVALESCENT HOMES IN THE UNITED STATES (6th ed.). Prepared under the auspices of the Committee on Public Health Relations of the New York Academy of Medicine. White Plains, N. Y.: The Burke Foundation, 1947. 112 pp. Price, $.50.

EIRE. Health Act, 1947 No. 28 of 1947. Dublin, Ireland: Government Publications Sale Office. 55 pp. Price, 3s.

400 YEARS OF A DOCTOR'S LIFE. By George Rosen, M.D., and Beate Caspari-Rosen, M.D. New York: Henry Schuman, 1947. 429 pp. Price, $5.00.

A GUIDE TO THE SELECTION AND TRAINING OF FOOD SERVICE EMPLOYEES. Prepared by a Committee of the Food Administration Section of the American Dietetic Association. Minneapolis: Burgess Books, 1947. 47 pp. Price, $1.50.

HEALTH EDUCATION HANDBOOK. Compiled by Carmen MacFarland and others. New York: The Woman's Press, Y.W.C.A. 58 pp. Price, $2.50.

HEARING AND DEAFNESS—A GUIDE FOR LAYMEN. Edited by Hallowell Davis, M.D. New York: Murray Hill Books, 1947. 496 pp. Price, $5.00.

INDUSTRIAL HEALTH ENGINEERING. By Allen D. Brandt, B.S., M.S., Sc.D. New York: Wiley, 1947. 395 pp. Price, $6.00.

MAINSPRING. By Henry Grady Weaver. Detroit: Talbot Books, 1947. 228 pp. Price, $1.00.

MANUAL OF MEDICAL PARASITOLOGY. By C. Courson Zeliff, M.S., Ph.D. State College, Pa.: Pennsylvania State College, 1947. 159 pp.

MEALS FOR MILLIONS. Final Report of the New York State Joint Legislative Committee on Nutrition. Newburgh, N. Y.: State Joint Legislative Committee on Nutrition, 1947. 213 pp. Free from publishers.

MEDICINE FOR MODERNS. The New Science of Psychosomatic Medicine. By Frank G. Slaughter, M.D. New York: Julian Messner, Inc., 1947. 246 pp. Price, $3.50.

THE MIND IN ACTION. By Eric Berne, M.D. New York: Simon and Schuster, 1947. 320 pp. Price, $3.00.

NEUTRON EFFECTS ON ANIMALS. By the Staff of the Biochemical Research Foundation. Baltimore: Williams & Wilkins, 1947. 198 pp. Price, $3.00.

NUTRITION IN HEALTH AND DISEASE (10TH ED.) By Lenna F. Cooper, Edith M. Barber, and Helen S. Mitchell, Ph.D. Philadelphia: Lippincott, 1947. 729 pp. Price, $4.00.

140 MILLION PATIENTS. By Carl Malmberg. New York: Reynal & Hitchcock, 1947. 242 pp. Price, $.95 paper, $2.75 cloth.

ORDINANCE AND RULES AND REGULATIONS FOR THE OPERATION OF CARE HOMES (includes nursing homes, rest homes, convalescent homes or boarding homes for the aged or mentally or physically infirm). Fort Worth, Tex.: Public Health and Welfare, 1947.

OUTLINE OF PROPOSALS FOR THE IMPROVEMENT OF THE HEALTH SERVICES. Dublin, Ireland: Government Publications Sale Office. 39 pp. Price, 3s.

PHYSIOLOGY AND PATHOLOGY OF THE NEWBORN. Bibliography of Material for the Period 1930–1940. Compiled by A. N. Antonov. Monographs of the Society for Research in Child Development. Vol. X Serial No. 41, 1945. No. 2. Washington, D. C.: Society for Research in Child Development, National Research Council, 1947. 217 pp.

PRINCIPLES OF OCCUPATIONAL THERAPY. By Helen S. Willard and Clare S. Spackman. Philadelphia: Lippincott, 1947. 416 pp. Price, $4.50.

REVIEW OF THE LITERATURE RELATING TO AFFECTIONS OF THE RESPIRATORY TRACT IN INDIVIDUALS EXPOSED TO COTTON DUST. Public Health Bulletin No. 297. By B. H. Caminita, William F. Baum, Paul A. Neal, and R. Schneiter. Washington, D. C.: U. S. Govt. Ptg. Office, 1947. 86 pp. Price, $.25.

RUSSELL SAGE FOUNDATION 1907–1946 (2 volumes). By John M. Glenn, Lillian Brandt, and F. Emerson Andrews. New York: Russell Sage Foundation, 1947. 746 pp. Price, $5.00.

SUMMARY OF INTERNATIONAL VITAL STATISTICS 1937–1944. Prepared under the supervision of Halbert L. Dunn, M.D. Washington, D. C.: U. S. Govt. Ptg. Office, 1947. 299 pp.

A SYNOPSIS OF HYGIENE. (9th ed.) By G. S. Parkinson and Kathleen M. Shaw. London: J. & A. Churchill, Ltd., 1947. 791 pp. 16 ill.

UNIFORM DEFINITIONS OF MOTOR VEHICLE ACCIDENTS. By Halbert L. Dunn, M.D., Evelyn H. Halpin, and Iwao M. Moriyama. Washington, D. C.: U. S. Govt. Ptg. Office, 1947. 17 pp.

THE FOLLOWING REPORTS HAVE BEEN RECEIVED

CHICAGO'S REPORT TO THE PEOPLE 1933–1946. Chicago: City of Chicago, 1947. 372 pp.

CHILDREN'S FUND OF MICHIGAN—18th Annual Report, May 1, 1946 to April 30, 1947. Detroit: 660 Frederick Street.

CITY OF COVENTRY. Annual Health Report for the Year 1946. T. Morrison Clayton, M.D., Medical Officer of Health. Coventry, England: Health Department. 27 pp.

DETROIT DEPARTMENT OF HEALTH—City Health Bulletin Annual Report, 1946, Vol. 31. No. 1. Detroit: Department of Health.

DIVISION OF LABORATORIES AND RESEARCH. Annual Report. Gilbert Dalldorf, M.D., Director. Albany, N. Y.: New York State Department of Health, 1946. 131 pp.

GENERAL EDUCATION BOARD, ANNUAL REPORT FOR 1946. New York: Rockefeller Foundation. 116 pp.

GUARDING THE HEALTH OF BALTIMORE. A Summary of the 132nd Annual Report of the City Health Department. Baltimore: City Health Department, 1946. 50 pp.

INTERNATIONAL HEALTH DIVISION. Annual Report 1946. New York: Rockefeller Foundation. 239 pp.

THE NUTRITION FOUNDATION, INC. Report of Scientific Director, June 30, 1947. New York: Nutrition Foundation, 1947. 101 pp.

PREVENTION AND TREATMENT OF TUBERCULOSIS IN THE ADMINISTRATIVE COUNTY OF LANCASTER. Report of the Tuberculosis Services of the Lancashire County Council for the year 1946. Preston, England: T. Snape & Co., 1947. 42 pp.

PROVINCE OF SASKATCHEWAN. Annual Report of the Department of Health, 1945. Regina: Thos. H. McConica, King's Printer, 1947. 169 pp.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

It's a Useful Adjunct—Here are two more reports on the efficacy of streptomycin in the treatment of human tuberculosis. Both confirm the findings of earlier papers recently called to your attention in this compendium of collateral reading for cognitive confréres.

ANON. The Effects of Streptomycin on Tuberculosis in Man (and) Annual Report of the Committee on Therapy and the Subcom-

mittee on Streptomycin. J.A.M.A. 135, 10:634 (Nov. 8), 1947.

New Lows in Salaries, Prestige, Security—Brief and packed with dynamite, this compilation of the growing lists of full-time health department vacancies leads to the conclusion that corrective action in recruitment and training is overdue.

ANON. Vacancies for Full-time Public Health Personnel in State and Local Health Departments, June, 1947. Pub. Health Rep. 62, 47:1668 (Nov. 21), 1947.

"Writ Sarkastik"—In the spirit of innocent fun your attention is called to the National Multiple Sclerosis Society—a recent addition which must nearly complete the roster of agencies dedicated to combating or curing one or the other of all the ills that prey on human flesh. These, be it noted, are in addition to the societies catering to the hygiene of the various and sundry portions of the human anatomy. In all seriousness, this review paper gives in useful capsule form, the best information currently available about this baffling disease.

ANON. Multiple Sclerosis. J.A.M.A. 135, 9:569 (Nov. 1), 1947.

Not To Be Missed—Though this is a discussion of a phase of medical practice, for medical practitioners, by a medical practitioner, every word has meaning for workers in preventive medicine — clinicians, nurses, social workers, volunteers. They too, need to know about psychosomatic medicine if diagnostic mistakes, futile treatments, and patients scared half to death are to be avoided.

ALVAREZ, W. C. Psychosomatic Medicine that Every Physician Should Know. J.A.M.A. 135, 11:704 (Nov. 15), 1947.

Despite Dislocated Populations—Women's war work might have been paid for in increased infant and maternal mortality rates. Contrary to such morbid expectations, new low records (in both classifications) were achieved.

BROMBACHER, N. J. Births, Infant Mortality and Maternal Mortality in the United States—1944. Pub. Health Rep. 62, 44, 1555 (Oct. 31), 1947.

For South American Export—Though this must be one of those introductory papers—designed to orient a professional group about to embark upon a consideration of working details—and so covers the widest area in the fewest words, it will still do you a lot of good to skim over almost the entire field of local health administration with this venturesome pilot.

DERRYBERRY, M. The Role of Health Education in a Public Health Program. Pub. Health Rep. 62, 46:1627. (Nov. 14), 1947.

Heritable Emotional Dispositions, etc.—If you are a philosophic sort, and have time on your hands for a little self-improvement, then you'll surely benefit by exposing your mind to the demographic, genetic, and psychologic aspects of differential fertility, all three subjects ably presented in a round table. But if you are so busy you don't know which way to turn, then you'd better turn to the third item following this one.

DORN, H. F., *et al.* Genetic and Social Significance of Differential Fertility. Milbank Quart. 25, 4:359 (Oct.), 1947.

Social Conditions Are Alterable Things—To just what practical use you can put the statistical information culled from this study isn't apparent to me. But I can promise that you'll find your speculations running away with themselves if you'll just mull over the tables of incidence of chronic diseases among husbands and wives.

DOWNES, J. Chronic Disease among Spouses. Milbank Quart. 25, 4:334 (Oct.), 1947.

Small But Bitter Sample—There was no difference (in dental decay)

among the malnourished children who received a supplement of a quart of milk a day and those who didn't, and—regardless of the milk supplement—the malnourished children had an incidence of caries only 44 per cent of that of well-nourished controls. Guardedly the writers conclude: "The results cannot be explained fully on the basis of present knowledge." A masterful understatement!

DREIZEN, S. *et al.* Prevalence of Dental Caries in Malnourished Children. Am. J. Dis. Child. 74, 3:265 (Sept.), 1947.

And Without Delay—History of fatigue and loss of appetite, particularly for meat, associated with discomfort either before or after eating is enough evidence to demand a complete gastric study. There, in capsule form, is the warning for us all to take to heart and to pass on to others. Every four minutes, year in and year out, someone dies of gastric carcinoma. Some of these lives could have been saved if the warning had been heeded in time.

ENGEL, G. C. Reducing Mortality in Gastric Carcinoma. J.A.M.A. 135, 11:687 (Nov. 15), 1947.

"Every Doctor a Health Officer"—Though this may be only a drifting straw, it suggests that the breezy gusts of neglect (about public health teaching) continue to ruffle the calm air of medical education. During the war, large groups of recently commissioned officers were questioned about everyday preventive medical practices. From a third to two-thirds revealed serious gaps in their knowledge of essential procedures.

FOOTE, F. M. Need for Wider Knowledge of Preventive Medicine. Bulletin (U. S. Army Med. Dept.), 7, 10:887 (Oct.), 1947.

About Earning a Child's Love—To a small child scrubbing his clothes and saving money for his education are not acts of love for him. What he needs are recognizable demonstrations of affection if he is to have the all-essential sense of security. This brief lecture, packed with generally ignored precepts like the sample above, is spread before you with engaging British simplicity.

HARRIS, N. The Health of the Mind. J. Roy. Inst. Pub. Health & Hyg. 10, 11:363 (Nov.), 1947.

Old People Are Your Customers, Too—For your guidance almost all you need to know about this paper is revealed in the title (in very small print below). The subject, like Mark Twain's weather, is something that, until recently at any rate, could be talked about only.

JOHNSON, W. M. Old Age: A Public Health Problem. Canad. Pub. Health J. 38, 10:461 (Oct.), 1947.

Farm vs. City—Is the Tuberculosis-histoplasminosis relationship business all cleared up for you? If not, then you will profit by reading about this survey of Ohio students. The urban North gave higher tuberculin-positive rates, the rural South gave higher histoplasmin-positive rates.

PRIOR, J. A., and ALLEN, M. F. Geographic Distribution of Histoplasmin and Tuberculin Reactors among Ohio State University Freshmen and Student Nurses Training in Columbus Hospitals. Pub. Health Rep. 62, 45:1608 (Nov. 7), 1947.

Something to Ponder—Most state health departments are probably without the organization and personnel required for keeping accurate indices of community health needs or services, concludes this study. In 29 states each division of the health department does its own statistical chores hit-or-miss: in only 19 departments is there a centralized statistical organization.

SWINNEY, D. D. Statistical Activities in State Health Departments. Pub. Health Rep. 62, 43:1527 (Oct. 24), 1947.

ASSOCIATION NEWS

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

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DECEASED MEMBER

Jesse H. Crouch, M.D., Richmond, Va., Elected Member 1925. Elected Fellow 1931. Elected Life Member 1932, Epidemiology Section

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EARLY 1947 JOURNALS WANTED

The Circulation Department would appreciate receiving a few copies of the January, February, April, and June, 1947, JOURNALS to furnish to members and subscribers who sent in their renewals after the supply of these issues became depleted. Individual members or organizations who can spare one or more of these issues are requested to mail them to the A.P.H.A. Office, 1790 Broadway, New York 19, N. Y., collect.

A.P.H.A. membership application blank on page XXIII

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

(Supplemental to list in December Journal)

Positions Available

Health Educator, graduate of a university of recognized standing with courses in the biologic and social sciences, psychology and education. Experience in writing desirable, experience in the field of health education required. Salary $4,047. Large city. Midwest. Write **Box H–548.**

Health Officer for county health department, near Chicago, suburban towns and good farming community. Department operating efficiently. Salary $6,000 to $7,200 depending on training and experience. Apply to Dr. Arthur S. Webb, Professional Arts Building, Glen Ellyn, Ill.

Food Microanalyst, bacteriologist for staff of long established canning industry laboratory in East. Training and experience in food microanalysis and bacteriology required. Opportunity for permanent position in charge of project on microanalysis of foods. Write National Canners Association, Research Laboratories, 1739 H Street, N. W., Washington 6, D. C.

Assistant Director, Division State Public Health Laboratories, in direct charge of laboratory in Bismarck. Requirements under merit System: Master's Degree Bacteriology and/or Serology, 4 years' practical experience; or, 3 years' experience, 1 year in public health school. Salary: $325–$400, depending on qualifications. Write: Director, Public Health Laboratory, Box C, University Station, Grand Forks, N. D.

Director of Nurses and Supervisor of Nurses; city-county health department; generalized program; office in industrial city and county of 165,000; salaries $3,000-$3,780 and $2,520–$3,180 respectively. Substantial car allowances for both. Positions available from December 1. For further information write Paul A. Lundquist, M.D., M.P.H., Director of Health, Kansas City-Wyandotte County Health Department, 619 Ann Avenue, Kansas City, Kan.

Several Health Officers in Texas. Salary $6,000 a year plus $50 per month travel allowance. The Public Health Program operates under a Merit System with the usual vacations, sick leave, and retirement benefits under certain conditions. For further information write to: Dr. George W. Cox, State Health Officer, Austin, Tex.

Public Health Nurses for family health program having special emphasis on prenatal patients and children to school age. Nurse must qualify for Illinois registration. Initial salary $2,430; 5 day week; 1 month's vacation annually; on-the-job transportation allowance; outdoor uniform furnished; group insurance coverage; retirement plan in operation. Salary consideration for previous public health education and/or experience. Write Superintendent, Infant Welfare Society of Chicago, 203 North Wabash Avenue, Chicago 1, Ill.

Qualified Public Health Nurse, Director for family health service in Mid-West city. Experience in maternal and child health field necessary. Salary open. Write **Box N–419.** Employment Service. A.P.H.A.

Bacteriologist and Serologist (assistant). College graduate. Salary range $210 to $260. Retirement benefits, vacation, sick leave, permanency. Apply to Charles A. Neafie, M.D., Director, Department of Public Health, Pontiac 15, Mich.

Bacteriologist: Male, Ph.D. Meticulous worker, stable, who can manage a department of a vaccine producing laboratory connected with a large Mid-West medical school. Salary $4,500 to start. Apply **Box Y–2.** Employment Service. A.P.H.A.

Health Officer for eastern city. Applicant must have graduate degree in Public Health Administration. State educational background, experience and salary expected. Write **Box U–4.** Employment Service. A.P.H.A.

Assistant Pediatrician. Full-time position, with state license or eligible for such license. Special training or experience in Maternal and Child Health. Actual travel expenses allowed. Riverside County, California. Apply Health Officer, Court House, Riverside, Calif.

Public Health Engineer. Full-time position, with training and experience to head Division Environmental Sanitation. Salary $4,500 annually, with actual travel expenses. Apply Health Officer, Court House, Riverside, Calif.

Medical Officer. Monthly salary range from $460 to $580 in five annual steps of $30. Allowance for meals and travel expense. Merit system with an attractive retirement plan. California license to practise medicine necessary. Inquiries should be addressed to Dr. William C. Buss, Kern County Health Officer, Post Office Box 120, Bakersfield, Calif.

Assistant Professor of Bacteriology with Ph.D. degree or near to it; areas of interest should be medical bacteriology, immunology, and taxonomy. Should have keen interest and ability in research. Will teach general bacteriology and taxonomy for the next two years, and then assume full charge of work in medical bacteriology and taxonomy. Position available now. Write **Box P–2.** Employment Service. A.P.H.A.

Virologist or Bacteriologist, Ph.D. Production and developmental research in Virus Department of a large Eastern pharmaceutical and biological house. Position carries considerable responsibility. Salary commensurate with training and experience. Replies held in confidence. Write **Box R–2.** Employment Service. A.P.H.A.

Supervisory Staff Nurse. Certificate in public health nursing. Salary $2,460–$2,700 payable monthly. 40–42 hour week, two weeks annual leave, 2 weeks sick leave.

2 **Staff Nurses,** postgraduate work in public health nursing or acceptable public health experience. Salary $2,220–$2,400 payable monthly. Own automobile required, annual travel allowance of $540. Write **Box Q–2.** Employment Service. A.P.H.A.

Dentist to operate mobile dental unit doing children's dentistry. Salary $4,500 plus $7.20 per week cost of living increase, and travel expenses. Write Division of Dental Health, State House, Augusta, Me.

Dentists for children's operative clinics in the Cincinnati, Ohio Schools. Full-time or half-time, 5 days per week. Minimum annual salary full-time $3,300. Vacation with pay. Sick leave and retirement. License to practise in the State of Ohio schools. Minimum annual salary full-time $2,100 5 days per week. Vacation and sick leave with pay and retirement. If interested, contact Dr. E. H. Jones, 530 Provident Bank Building, Cincinnati 2, Ohio.

Staff Veterinarian to work in meat, milk, and food in the City of Flint, Mich., Health Department. Salary range $3,394 to $3,769. Write to Civil Service Commission, City Hall, Flint, Mich.

Health Commissioner for County of 40,000, Midwest. Possibility of including three cities located in the county in the County Unit. Salary $6,600 plus traveling expenses. Write **Box K–2.** Employment Service. A.P.H.A.

Graduate Nurse preferably with Master's degree to direct Central Service for the Chronically Ill, a unit of the Regional Health and Welfare Council. With guidance of a Steering Committee, the administrator plans and directs the work of the Committees engaged in the promotion and development of facilities for better care of chronically ill persons. Supervisory or administrative experience in public health and institutional nursing desirable. Apply to: Health Division, Health and Welfare Council, Inc., 311 So. Juniper Street, Philadelphia 7, Pa.

Assistant Health Officer with M.D. degree. Must have had administrative experience. Full-time position. Beginning salary $5,640 annually. Apply Health Officer, Court House, Riverside, Calif.

Dental Hygienist to examine school children and conduct health education programs in the Cincinnati, Ohio, schools. Minimum annual salary full-time $2,100, 5 days per week. Vacation and sick leave with pay and retirement. If interested, contact Dr. E. H. Jones, 530 Provident Bank Building, Cincinnati 2, Ohio.

Public Health Nurses, qualified for resort area of Northern Michigan. Positions open immediately for staff and senior nurses. Salaries $2,400 and $2,700 respectively. Liberal car allowance. Excellent region for those with hay fever. Write for personnel form to Northern Peninsula Office, Michigan Department of Health, Escanaba, Mich.

Assistant Director in Division of Laboratories to be in charge of branch lab-

oratory. Master's degree plus 4 years' experience in public health laboratory; or 3 years of experience and one year of study in approved school of public health. Salary $325–$400 monthly. Write **Box S–2.** Employment Service. A.P.H.A.

Supervising Nurse with degree, experienced, for County Health Department with a staff of ten nurses. Salary $3,120 plus milage. Write **Box T–3.** Employment Service. A.P.H.A.

Public Health Nurses (Staff Nurses, Supervisors, Educational Directors, Consultants, Directors). Many interesting positions with good salaries available in voluntary and official agencies in various sections of the country, both urban and rural. At least minimum N.O.P.H.N. qualifications required for most positions in the different grades. No fees of any kind. To register for placement visit or write to the Nurse Counseling and Placement Office, New York State Employment Service, 119 West 57th Street, New York 19, N. Y.

Town of 28,000, North Eastern U. S., located close to medical and cultural centers needs full-time **Health Officer;** salary $6,000 plus mileage. Write Chairman, Board of Health, Milford, Conn.

Staff nurses (2) for well established county health department in Michigan. Beginning salary for nurses with basic public health training is $2,550 plus $700 travel allowance. Write to the Director, Ottawa County Health Department, Grand Haven, Mich.

Director for two county District Health Departments located in Northern Peninsula of Michigan. Required: M.D., preferably with public health training and experience. Staff: three nurses, two sanitarians, and two clerks. District consists of 2,518 square miles of wooded area. Population approximately 30,000. Salary $6,120 with adequate travel allowance. Write to Director, Northern Peninsula Office, Michigan Department of Health, Escanaba, Mich.

Health Educator with training in Health Education and with experience in teaching in a public school system. Salary $275, plus travel reimbursement. Write to: Charles K. Kincaid, M.D., Director, Will County Health Department, 21 E. Van Buren Street, Joliet, Ill.

Assistant Nurse Supervisor. Salary $2,640 to $3,000, depending on individual experience and training; plus travel reimbursement. Requirements: B.S. degree in Public Health Nursing and experience in well supervised generalized nursing program. Write to Charles K. Kincaid, M.D., Director, Will County Health Department, 21 East Van Buren Street, Joliet, Ill.

Health Educator, M.P.H., Midwestern City, 35,000–40,000 enrollment. $4,500–$5,000, Civil Service, accumulative sick leave, vacation, retirement. Under 35 years of age, good appearance and pleasing personality. State experience and training. Enclose recent photograph. Write **Box H–546.** Employment Service. A.P.H.A.

Graduate in Bacteriology with some background in chemistry and experience in field of sewage and water research or treatment. To take charge of section of newly organized research project, Eastern United States. Salary $3,200–$4,200, depending upon qualifications. Write **Box L–551.** Employment Service. A.P.H.A.

Director of Nurses for private community-nursing service in Chicago suburban residential community. Includes both infant and general nursing. Educational qualifications to be in line with standard set up by N.O.P.H.N. for such positions. M.A. very desirable. Experienced as supervisor or director. State age, experience, and salary expected. Write **Box N-421.** Employment Service, A.P.H.A.

Staff Nurses for generalized program in city and county of 105,000 population. Educational and cultural center including three colleges. Salaries based upon qualifications range from $2,900–$3,440. Must furnish own car; 6c per mile. Apply: Health Department, Kalamazoo, Mich.

Director of Health and Welfare, large county West Coast. Full-time administrative position with responsibilities for four divisions (Health, Social Service, TB Sanatorium, and Hospital). Population approximately 175,000 urban and rural. Requirements: Age limit 55. Eligibility for California licensure. Graduate of approved medical school, internship 5 years acceptable, progressively responsible public health administrative experience in public health agency (or 4 years plus M.P.H. degree or 1 year training in hospital administration). Monthly salary $1,013–$1,267. Closing date for filing applications January 15. Write: San Mateo Civil Service Commission, Court House, Redwood City, Calif.

Public Health Opportunities in Indiana

1. **Medical Director** for branch office, Indiana State Board of Health. Car fur-

nished; salary $5,400 to $6,600 per year, depending on qualifications.

2. **Health Educator** for branch office, Indiana State Board of Health. Salary $225–$375, depending on training and experience.

3. **Assistant Sanitary Engineers** for branch offices and central office, Indiana State Board of Health, salary $250–$350 depending on training and experience.

4. **Public Health Nursing Consultant and Assistant Consultant,** Indiana State Board of Health, salary $225–$375. Degree with major in public health nursing and experience required. Submit training and experience or inquiries to L. E. Burney, M.D., State Health Commissioner, Indianapolis, Indiana.

5. **Health Officer** for City of Gary, Indiana. Salary $7,500; travel $600. Submit training and experience or inquiries to T. J. Senese, M.D., 504 Broadway, Gary, Ind.

School Physician for combined position city health officer and Director of school health department. Community in Indiana with population of approximately 70,000. Salary about $8,000. Write **Box X-2,** Employment Service, A.P.H.A.

Public Health Supervisor, salary $3,300. Four staff nurses, salary $2,460, for newly established health unit in east-central Illinois. Staff will also consist of one sanitarian, two clerks, one clerk-stenographer, besides the director. Opportunity to help formulate new public health program for entire staff personnel. Write Director of Health, P. O. Box 175, Dewitt-Piatt County Health Unit, Clinton, Ill.

School Physician for Teachers College. Population 1,500 (near Chicago). Complete charge of clinic and work with health coördinator and health council in improving school health program. Salary open. Write to President Karl L. Adams, Northern Illinois State Teachers College, DeKalb, Ill.

POSITIONS WANTED

Licensed Veterinarian: Public Health and disease control experience in United States and abroad desires position in public health or industry. Write **Box V-308,** Employment Service, A.P.H.A.

Physician, woman, consderable clinical and administrative experience in child health work. Last 3½ years: senior physician, hospital school for crippled children including responsibilities for rehabilitation, X-ray and laboratory work. Interested in openings in Maternal and Child Health and crippled children's work, schools, industry. Write **Box C-421,** Employment Service, A.P.H.A.

Industrial Hygienist 6 years' experience in industrial hygiene work in state and city health departments, 2 years as industrial chemist in industry. Present position: Assistant Director of Industrial Hygiene in official agency. Master's degree in sanitary engineering, (2 years graduate work). Male 32, married, veteran. Desires position in governmental agency or industry. Write **Box I H-463,** Employment Service, A.P.H.A.

Physician, specialized in tuberculosis work. Thirteen years' clinical and administrative tuberculosis experience in public health agencies and institutions. Currently employed but seeking position offering wide professional scope and responsibility. Male 40 years old, married. Write **Box C-425.**

Dentist: D.D.S., M.S.D. (Major Pedodontia) M.P.H., wishes full-time teaching position in his specialties or institutional employment. Opportunity for employment abroad is considered. Write **Box D-22,** Employment Service, A.P.H.A.

Public Health Nurse as Assistant Director in children's Health School. Full responsibility for home investigation and admissions. Coöperative responsibility with Director for administration of institution. Good salary plus full-maintenance. Health Hill, 2801 East Boulevard, Cleveland, Ohio.

Public School Nurse for city in Michigan. Year round position with one month's vacation with pay in the summer. Write **Box H-3,** Employment Service, A.P.H.A.

Health Officer for the Effingham-Shelby Bi-County Health Department in central Illinois. Combined population 50,000. Department established by referendum in 1946. Staff of 12 planned. Salary $7,200 plus travel. Write to O. G. Kauder, M.D., Findlay, Illinois, or Mr. J. H. Griffin, Teutopolis, Illinois.

Industrial Hygiene Engineer or Sanitary Engineer with Industrial Hygiene Specialty for Arizona Department of Health. Will train qualified person. Merit System position with vacation and sick leave. $325–385 with travel allow-

ance. Write Division of Sanitary Engineering, Capital Building, Arizona, State Department of Health, Phoenix, Ariz.

Staff Public Health Nurse in the Department of Public Health, Oak Ridge, Tenn. Generalized Nursing Service for city of 35,000 population. Industry in connection with the research and development of nuclear power. Minimum salary $2,709 per annum. Forty hour work week. Car furnished for all official work. Apply: Charles H. Benning, M.D., M.P.H., Director of Public Health, P. O. Box 486, Oak Ridge, Tennessee.

Physician as Director City-County Health Department, Eau Claire, Wis., population 56,000; staff of 14; ideal offices and laboratory. Salary for man with degree in public health $6,420 plus 6¢ per mile travel. Write City-County Health Department, Safety Building Eau Claire, Wis.

Physician, woman, 34 years old, M.P.H. 1947 (Harvard), graduate of recognized Central European Medical School, U. S. citizen. Approved interneship, residencies in surgery, obstetrics, medicine (including geriatrics). Clinical teaching experience in obstetrics. 2 years' private practice. Interested in openings in maternal and child health, school health, or general administrative work with official or voluntary agency. Write **Box C-419,** Employment Service, A.P.H.A.

Health Educator, woman, Negro, M.A. in Health Education (University of Michigan); 14 years' teaching experience in schools as well as community health education; last two years Executive Secretary of national agency engaged in promotion of volunteer health programs. Writing and editorial experience. Write **Box H-544,** Employment Service, A.P.H.A.

Bacteriologist, M.P.H., University of Michigan. Woman, 28. Now employed. Background in bacteriology and chemistry of milk and water and in bacteriology and epidemiology of communicable diseases. Some academic work in administration. Research experience in industrial wastes. Four years' practical experience in a State Board of Health Laboratory. Write **Box L-545,** Employment Service, A.P.H.A.

Parasitologist, B.S. (major in biology), graduate work (27 credits) in parasitology and protozoölogy. Male, 28 years, married, 6 years' laboratory experience in parasitology and serology. Experience includes work in armed forces, university research laboratory, industrial research laboratory. Write **Box L-547,** Employment Service, A.P.H.A.

Chemist, Virologist, B.A., experience in research on pathogenic viruses (Army Bacteriological Warfare Project), as well as in micro-spectrophotometric vitamin analyses in nutrition survey. Male, single, will travel. Write **Box L-543,** Employment Service, A.P.H.A.

Non-medical Administrator, male, age 34, experienced in community organization, program development, public relations; presently employed as director of a state rehabilitation and welfare agency. Interested in position as executive secretary in voluntary or official health or welfare agency, or as director of an industrial welfare program. Prefer the west Coast. Write **Box M-515,** Employment Service, A.P.H.A.

Public Health Engineer and Bacteriologist, B.S. and M.P.H. Degrees from prominent eastern universities. Five years' experience includes work with private agency, state health department, and U. S. Army. Seeks position with private industry or official agency preferably in northeast. Write **Box E-524,** Employment Service, A.P.H.A.

Apprentice Training Program for Public Health Nutritionist in New York State

The New York State Health Department announces a new program for the training of public health nutritionists. The objective is "to offer experience under close supervision in the public health field to nutritionists with good academic training but inadequate field experience."

A.B.S. degree from a recognized institution with sound training in human nutrition and one year of graduate work leading to a master's degree represents the basic academic requirement. In addition, it is desirable that workers in public health nutrition have special courses in public health education, community organization and resources, child development, and the making of dietary studies.

It is planned to offer a 12 month period of supervised field service on an annual stipend of $2,500 plus travel allowance. Car desirable but not essential. Write to Senior Nutritionist, Division of Maternal and Child Health, New York State Department of Health, 39 Columbia Street, Albany 7, N. Y.

Advertisement

Opportunities Available

WANTED—(a) Medical director and administrator, health service; duties consist of directing health program, serving as consultant and advisor to other departments such as nursing, nutrition and safety service; $6,000–$7,800; large city in the Southeast. (b) Physician experienced in college or public health work; newly-created position of assistant medical director; one of country's largest universities; preferably man qualified to succeed director upon retirement within seven years; $7,000. (c) Young physician with public health background for assistant medical directorship, large teaching hospital; eastern metropolis. (d) Assistant school physician and, also, school dentist; public school system considered one of most progressive in the country; enrollment of 25,000; Middle West. (e) Director; city health department; southwestern city of 200,000. (f) Physician trained in public health and experienced in public health administration for European assignment. (g) Medical director; key position requiring administrative ability; South America. (h) Medical director; city of 100,000 located short distance from several large cities and university medical center; Middle West. **PH1-1** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

WANTED—(a) Public health supervisor to direct generalized public health nursing and school health program; should be qualified to develop service; town of 85,000; minimum $3,600–$4,000; California. (b) Public health supervisors and staff nurses for positions in South America; knowledge of Spanish or Portuguese desirable. (c) Consultant nurse for cancer control; duties include giving nursing supervision to tumor diagnostic clinics throughout the state; will work closely with various agencies and medical societies; $3,660–$4,300. (d) Public health nurse executive to direct public health agency; extensive experience prenatal, infant welfare and pediatrics required; must have ability to direct large staff of public health nurses; $6,000. (e) Student health nurse; duties include those of social director, large hospital, university medical center. East. **PH1-2** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

WANTED—(a) Health educator, county health department; preferably someone with several years' experience in education including public relations, radio work, exhibitions, etc.; headquarters in town of 90,000; East. (b) Health educator to serve as consultant to educators in state health department; several years' experience required; $4,000–$4,800. **PH1-3** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

WANTED—(a) Sanitary engineer to direct mosquito control program; four years' professional engineering experience including work in sanitary engineering required; around $6,000; foreign appointment. (b) Industrial hygienist; Master's degree required; mining company; West. (c) Bacteriologist to direct public health laboratories; town of 100,000; Chicago area. (d) Sanitary engineer with public health background, experienced in water and malarial control, insect control, to direct department serving 7,000,000 population; Tropics. **PH1-4** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

Advertisement

Opportunities Wanted

Public health physician; before entering medical school had several years' experience as sanitary engineer and completed year's fellowship in public health administration; military service consisted of public health work in the Orient, where he had control of a cholera epidemic; interested primarily in public health position of executive nature; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Sanitary engineer is available for public health appointment; C. E., Eastern university; two years' municipal engineering including supervision of field personnel; six years, sanitary engineer with state department of health where he has obtained broad experience in all phases of environmental sanitation; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator; A.B. degree, Eastern university; graduate training in Education, M.P.H., Harvard School of Public Health; three years, statistician, metropolitan health department; six years, health educator, state department of health; three years, consultant in health education; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Sanitarian; degree in Civil Engineering; five years, sanitary engineer, county health department; six years, director, rural sanitation, state department of health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

NEWS FROM THE FIELD

INTERNATIONAL EXCHANGE OF NURSES

The first international exchange of public health nurses was achieved in the fall between the Borough of Tottenham, England, and Syracuse, N. Y., according to Dr. H. Burton Doust, Syracuse Commissioner of Health.

Exchange of nurses was first suggested by Amy Sayle, Chairman of the Womens Public Health Officers Association of England. She approached Dr. Frank G. Boudreau, Executive Director of the Milbank Memorial Fund, who turned to the National Organization for Public Health Nursing for assistance. The Syracuse Department of Health through Dr. Doust, secured approval for the exchange from the Mayor and Corporation Counsel and thereafter entered into correspondence with G. Hamilton Hogben, Medical Officer of Health for the Borough of Tottenham, the N.O.P.H.N., and the nurse selected to be the English exchange nurse.

Nora Lennon, staff member of the Tottenham Health Department, began work in Syracuse September 15, and Ruth Driscall, staff member of the Syracuse Department of Health, began work in Tottenham October 15. Salaries are being paid these nurses by their respective departments. In order to equalize Miss Lennon's salary in the United States the Milbank Fund has given her an assistance grant.

Miss Lennon was employed as a health visitor and has a midwifery certificate. Miss Driscall is a graduate from University Hospital School of Nursing in Syracuse and Syracuse University. In addition she has had special work at Stokes Institute in Philadelphia.

Miss Lennon was assigned a district in the Neighborhood Substation where conditions are varied and population is typical of the average urban area. Her first impressions are that Syracuse gives more individual service than is given in England and because of this serves fewer of the population. She expects to study criteria for discharging families from service as well as methods of case selection and frequency of visits.

INTERNATIONAL MENTAL HEALTH CONGRESS

Preliminary announcement has been made of the International Congress on Mental Health to be held in London, August 11–21, 1948. It " will mobilize the efforts of many different professional groups for the study and application of the principles essential to the building of harmonious human relations." At this Congress it is hoped to adopt a permanent Constitution and By-Laws for the World Federation of Mental Health, following which application will be made to UNESCO and WHO of the United Nations for recognition as the official international voluntary organization in the field of mental health.

U. S. *Bulletin No. 1* of the International Congress for Mental Health, dealing with United States participation in the coming Mental Health Congress, is available from the International Committee for Mental Hygiene, 1790 Broadway, New York 19, Nina Ridenour, Executive Officer.

PUBLIC HEALTH NURSING WEEK

The fourth annual observance of National Public Health Nursing Week, sponsored by the National Organization for Public Health Nursing in coöperation with the U. S. Public Health Service and more than 3,000 local committees representing visiting nurse associations, health departments, boards of education,

and citizen groups, will be April 11–17, 1948.

The objectives of Public Health Nursing Week are:

1. To highlight the little known fact that public health nursing services are for people of all incomes.
2. To point up public health nursing as a satisfying career (more public health nurses are urgently needed).
3. To stimulate the organization of public health nursing services wherever needed (1,133 counties and 23 cities still have no public health nursing services).
4. To increase financial support for public health nursing.
5. To promote citizen participation in public health nursing services as volunteers, members of boards and committees.

A special kit for Public Health Nursing Week may be secured from the National Organization for Public Health Nursing, 1790 Broadway, New York 19.

DOCTORS CORI AWARDED NOBEL PRIZE IN MEDICINE

Two naturalized Americans and an Argentinian shared the 1947 Nobel Prize in Medicine, according to a recent announcement from Stockholm. Dr. Carl Ferdinand Cori, and his wife, Dr. Gerty T. Cori, of Washington University, St. Louis, received their award for "the discovery of the process in the catalytic metabolism of the glycogen of animal starch."

Bernardo A. Houssay, M.D., received his half of the award for "his discovery of the significance of the hormone produced by the frontal lobe of the pituitary gland."

Dr. Carl Cori was one of the five scientists to receive the first Lasker Awards of the A.P.H.A. in 1946 when he was cited for his studies on carbohydrate metabolism and the mutual reactions of hormones in the human body.

PRENTISS AWARD TO DR. BAUER

At the 7th Anniversary Civic Luncheon of the Cleveland Health Museum on November 17, W. W. Bauer, M.D., Director of the Bureau of Health Education of the American Medical Association since 1923, was presented the 1947 Elisabeth Severance Prentiss National Award in Health Education. As a tribute to his outstanding work in the field of health education, he received a replica plaque of the original bronze award model permanently on display in the Cleveland Health Museum. He was also presented an embossed certificate outlining his achievements as a health officer, author, lecturer, broadcaster, and adviser in personal and public health.

The Prentiss Award was established in 1943 in honor of the Museum's first foundation benefactor, Elisabeth Severance Prentiss, to encourage outstanding work in the field of health education. Previous winners have been Mary S. and Evart G. Routzahn in 1944, Professor C.-E. A. Winslow in 1945, and Mary P. Connolly in 1946.

PSYCHIATRIST ON WESTERN RESERVE STAFF

In view of estimates by school health authorities that 10 per cent of students in college need some type of psychiatric attention, a psychiatrist has been added to the health service staff of Western Reserve University.

A marriage clinic for women students has also been added to the Student Health Center which also works in close coöperation with the university chaplain.

The university has also expanded its tuberculosis case finding, and reports that it is now giving chest x-ray examinations to 3,500 entering students each semester, representing approximately 28,000 family contacts a year.

POPULATION STUDIES

The Population Investigation Committee (Great Britain) began publication of *Population Studies* in April, 1947. A quarterly journal of demography, its purpose is to encourage research into

the quantitative and qualitative aspects of population problems. It will publish contributions from many countries. Address editorial correspondence to its Editor, Dr. D. V. Glass, The London School of Economics, Houghton Street, Aldwych, London, W.C.2. The United States Editor is F. W. Notestein, Office of Population Research, Princeton University, to whom American contributions may be submitted.

Subscription 30s. annually.

COMMUNITY SURVEYS, INC.

Bradley Buell has resigned as Editor of the *Survey Midmonthly* to direct Community Surveys, Inc. This organization, on a non-profit basis, will undertake to make overall social surveys of communities including health, welfare, child care, recreation, and other aspects of community life. This work is made possible by a special appropriation for a three year period from the Grant Foundation.

The Associate Director of Community Surveys is Madeleine Berry. Its offices are at 58 Park Avenue, New York 16.

LOSS OF CONTAINERS FOR LABORATORY SPECIMENS

A regulation adopted at a recent meeting of the Public Health Council prohibits the use of containers provided by the West Virginia State Hygienic Laboratory for purposes other than sending specimens for examination and diagnosis of diseases to that laboratory. The annual loss of containers has long been a serious problem, amounting last year to about $12,000 because of the failure to return containers. These are mailed without charge to physicians, hospitals, and public health agencies throughout the state.

STUDY OF OLD AGE DISEASES

Beginning with the academic year, 1947–1948, a research project in old age diseases was undertaken by the New York University College of Medicine in coöperation with: the Goldwater Memorial Hospital (a municipal hospital for the study of chronic and old age diseases), the City of New York, the National Institute of Health, and the Macy Foundation.

The program is under the supervision of J. Murray Steele, M.D., Associate Professor at the New York University College of Medicine.

No more than 10 patients will be studied at one time but over a period of years, 200 to 300 patients are expected to participate. The patients will be largely from the Goldwater Memorial Hospital but others may be recruited from the City Home for Indigent People.

Dr. Steele explained that the philosophy of the project is not primarily to increase the life span of the individual but to increase his "span of health" so that his last years will be spent in "reasonable comfort and happiness" and he will not become a burden to the community.

SAFETY IN ATOMIC PLANTS

The first step in a program to survey hazards resulting from atomic activity was recently announced by the U. S. Atomic Energy Commission. This was the appointment of a Safety and Industrial Health Advisory Board composed of 10 experts in various fields of industrial health and safety. Among the members of this Safety Board are Dr. Abel Wolman, Head of the Sanitary Engineering Department of Johns Hopkins University, who will survey sanitary engineering, Dr. Philip Drinker of the Harvard School of Public Health, who will survey industrial health and hygiene, and Dr. Herbert M. Parker, Assistant Superintendent of the Medical Department of the General Electric Company, who will advise on radiation protection measures.

The atomic energy program already

has an outstanding safety record, having received the National Safety Council awards for distinguished service to safety in both 1945 and 1946 as well as two top honors in the National Traffic Safety contest.

The 10 members of the Board are visiting the atomic energy installations at Oak Ridge, Chicago (Argonne National Laboratory), Los Alamos, Berkeley, and Hanford.

NEW YORK CITY REGULATIONS REGARDING BARBITURATES

Beginning November 1, to protect the public, prescribing and dispensing barbiturates in New York City will be governed by the following requirements of the Sanitary Code:

1. Barbiturates may not be dispensed except on written prescription.
2. Prescriptions for barbiturates may not be refilled unless there is specified on the prescription the number of times they may be refilled and the minimum interval that may elapse between refillings.
3. Under no circumstances may a prescription for barbiturates be refilled later than 3 months after the date of issuance.
4. Barbiturates may not be dispensed on a telephone order.
5. A copy of a barbiturate prescription cannot be filled; only an original is acceptable.
6. Barbiturates, including manufacturers' samples dispensed directly to a patient by a physician, must be given in a container on which the following information appears: (a) doctor's name and address; (b) patient's name and address; (c) directions for use, and (d) date of dispensing.
7. Prescriptions written for compounds containing barbiturates are exempt from the provisions of the new law if the compound contains, in addition to the barbiturate, such quantity of another drug or drugs as to make the action of the compound not primarily hynotic or somnifacient and provided no such compound contains more than ¼ grain (15 mg.) of a barbiturate in each dose. Preparations used as sprays, gargles, or for external application are also exempt if they contain, in addition to the barbiturate, ingredients which make the preparation unfit for internal use.

The growing problem of the abuse of barbiturates has made the new regulations necessary. Seventy-seven accidental deaths in the city due to these drugs occurred in 1946 compared with 11 deaths in 1930. In addition the number of persons who have committed suicide by means of barbiturates has increased.

DR. VAN HORN DIRECTS KATE MACY LADD FUND

Abram L. Van Horn, M.D., Chief, Program Planning Section, U. S. Children's Bureau, Washington, D. C., resigned on November 7 to accept a position as Medical Director of the Kate Macy Ladd Fund of Newark, N. J. The Kate Macy Ladd Fund is a new private foundation established under provision of the will of the late William G. Ladd of Peapack-Gladstone, N. J., in honor of his late wife, Kate Macy Ladd. The interests and activities of the Fund will be devoted entirely to the field of convalescent care for all age groups. Dr. Van Horn has been on the staff of the Children's Bureau for eleven years, holding positions as regional medical consultant; assistant director, Crippled Children's Service; assistant director, Division of Health Service, and director, Division of Health Service.

DR. SABIN'S NEW AWARD

Florence Rena Sabin, M.D., received the annual Federation Award of the American Woman's Association at its 21st Annual Friendship Dinner in New York on November 9.

In the presentation address, Miss Helen Hayes, the toastmistress, said that the Award was made for notable contributions of Dr. Sabin through her profession, and praised her also as a woman of " vision, integrity, and valor."

Dr. Sabin is an Honorary Fellow of the American Public Health Association and since 1944 has been Chairman of the Health Committee in her native state of Colorado. Through her committee's

work, public health legislation in the state has been rewritten and state-wide interest in the development of adequate public health service has been created.

Previous to her retirement, Dr. Sabin was on the scientific research staff of the Rockefeller Institute for Medical Research carrying on basic research in tuberculosis and cancer.

DR. LUCKIESH AWARDED I.E.S. GOLD MEDAL FOR LIGHTING RESEARCH

Matthew Luckiesh, D.Sc., D.E., General Electric Co. Lighting Research Laboratory Director of Cleveland, Ohio, has been awarded the I.E.S. Gold Medal. This supreme honor of the Illuminating Engineering Society is awarded in recognition of "meritorious achievement which has conspicuously furthered the art or knowledge of illuminating engineering." The medal was presented to Dr. Luckiesh by the society's President, G. K. Hardacre, before a formal banquet audience of over 600 delegates and guests of the I.E.S. 1947 National Technical Conference held in New Orleans in September. The delegates included members from 25 states and 5 foreign countries.

At the 1947 Atlantic City meeting of the A.P.H.A., Dr. Luckiesh presented a paper on "Effectiveness of Germicidal Radiant Energy on Air-Borne Respiratory Diseases." He also appeared before the joint committee of the A.P.H.A. and I.E.S. to study problems of illumination at its November meeting at Nela Park, Cleveland, Ohio.

MICHIGAN COMMITTEE DEVELOPS SUBSIDY PLAN

Hugh B. Robins, M.D., Director, Calhoun County Health Department has been appointed chairman of a committee to develop state-wide backing for a state subsidy plan in Michigan whereby the state will provide funds on a matching basis to local health departments. The appointment was made at a recent meeting of the Michigan Health Officers Association. The plan of subsidy was worked out and endorsed by the State Supervisors' Association. It will be presented to the Michigan Legislature for consideration.

NEW MERCED COUNTY HEALTH DEPARTMENT

Merced County recently became the thirty-first county in California to organize a full-time health department. John R. Philp, M.D., who has just completed his graduate work at the Harvard School of Public Health, is the Health Officer of the newly organized county health department which serves a population of more than 50,000.

DERTOIT DEPARTMENT OF HEALTH NEW ADDRESS

On December 1, the administrative offices of the Detroit Department of Health will be moved to 334 Bates at Jefferson Avenue, Detroit 26, Mich.

INTERIM COMMISSION WHO HOLDS FOURTH SESSION IN GENEVA

The Fourth Session of the Interim Commission of the World Health Organization convened in Geneva, Switzerland, during the first half of September. The Chairman was Dr. A. Stampar of Yugoslavia. At the time of the meeting, 15 Member States of the United Nations had ratified the Constitution of the World Health Organization and it was hoped that the First World Health Assembly which is required to be held not later than 6 months after ratification of the Constitution by 26 members of the United Nations might meet possibly in May or June, 1948.

There were about 50 participants at this Conference which included besides the Chairman such well known names as Drs. G. H. De Paula Souza of Sao Paulo, Brazil; P. Z. King, Vice-Minister of Health of China; Szeming Sze,

Resident Representative, National Health Administration of China, Washington, D. C.; George D. W. Cameron, the Deputy Minister of National Health and Welfare of Canada; M. R. Bow, Deputy Minister of Health of Alberta; Karl Evang, Surgeon-General of the Department of Public Health of Norway; Melville D. Mackenzie, Principal Medical Officer of the British Ministry of Health; Thomas Parran, Surgeon-General of the U. S. Public Health Service; H. Van Zile Hyde, Senior Surgeon, U. S. Public Health Service; Carlos E. Paz Soldan, Professor of Hygiene, University of San Marcos, Lima, Peru, and the staff of the WHO, including Drs. Brock Chisholm, Executive Secretary; Raymond Gautier, Counsellor and Chief of the Geneva Office, and Frank Calderone, Director of Headquarters Office, New York City.

Among the problems discussed were international epidemic control, the fight against influenza, international action against plague, venereal disease problems, schistosomiasis, quarantine measures against psittacosis, international action against alcoholism, world production of insulin, future of the international center of Salmonella, danger of post-vaccinal encephalitis, and the medical examination of immigrants.

PENNSYLVANIA PUBLIC HEALTH ASSOCIATION

At the recent meeting of the Pennsylvania Public Health Association, the following officers were elected:

Honorary President—Norris Vaux, M.D., Secretary of Health

President—Harriet L. Hartley, M.D., Philadelphia

President-Elect—Oliver E. Turner, M.D., Pittsburgh

Vice-President—Eli Eichelberger, M.D., York

Secretary-Treasurer—J. Clarence Funk, Fayetteville

At the dinner meeting, the President of the American Public Health Association, Martha M. Eliot, M.D., spoke on "The Role of Child Health Services in the Future Organization of Public Health." Speakers at the afternoon session preceding the dinner were Reginald M. Atwater, M.D., Executive Secretary of the American Public Health Association, on "The Public Health Professions Organize for the Future," Pascal F. Lucchesi, M.D., Chairman of the Pennsylvania Medical Society's Commission on Preventive Medicine and Public Health, on "Unity of Action in Public Health," and Raymond T. Rich, public relations consultant, on "Public Relations and Public Health."

DR. BREED RETIRES

On November 1, Robert S. Breed, Ph.D., retired as Director of the New York State Agricultural Experiment Station in Geneva, N. Y., after 34 years of service.

Dr. Breed is a Charter Fellow of the American Public Health Association and since 1916 has been a member of the committee preparing the Association's *Standard Methods for the Examination of Dairy Products*, the 9th edition of which will be published early in 1948.

He has also served since 1937 as Editor-in-Chief of *Bergey's Manual of Determinative Bacteriology*, the 6th edition of which is in press.

Dr. Breed has served since 1930 as a permanent secretary of the International Commission on Bacteriological Nomenclature. In the summer of 1947, he attended the fourth International Congress for Microbiology where a code of nomenclature for bacteria drawn up by the Commission was adopted.

One of Dr. Breed's most notable contributions is the Breed Method for the direct counting of bacteria in milk and cream. The method has been adopted as an officially approved method for use in milk control throughout the United States and in many foreign countries.

Among Dr. Breed's retirement plans

are: an assignment with the Mayaguez Tropical Products Company in Puerto Rico in January; a series of lectures on the classification of bacteria at the University of Louisiana in February; and a visit to the Inter-American Experiment Station in Turrialba, Costa Rica in the spring.

ARKANSAS PUBLIC HEALTH ASSOCIATION ORGANIZED

During the Annual Conference conducted by the Arkansas State Board of Health in Little Rock, November 20–22, 1947, the Arkansas Public Health Association was established and a constitution and by-laws were adopted. The Association has more than 230 charter members. It is intended, according to Dr. T. T. Ross, State Health Officer, to expand the membership through employees of local health departments and interested lay citizens.

Dr. E. J. Easley, Little Rock, is President of the new Association. Roy M. Reid, Little Rock, is Secretary-Treasurer.

TUMOR RECORD REGISTRY

The Chronic Disease Service of the California Department of Health has inaugurated a tumor record registry on a voluntary pilot basis in selected California hospitals. The program will be carried out in consultation with the Cancer Commission of the California Medical Association. The purposes of this registry are (1) to determine the extent of cancer morbidity in the state, (2) to permit statistical epidemiologic studies, (3) to supply leads for clinical and laboratory research, (4) to facilitate follow-up of patients, (5) to evaluate therapy and the cancer control program, and (6) to furnish information for professional and lay education.

CLEVELAND'S MEDICAL CENTER

A joint Committee for the Advancement of Medical Education and Research was recently formed in Cleveland. Its avowed purpose is to make Cleveland the outstanding medical center in the Middle West. Its Director is Robert H. Bishop, Jr., M.D., who resigned as Director of the University Hospitals to take the new position. He has been Director of the University Hospitals since 1931 and had previously served in the Cleveland Health Department, first as Director of Tuberculosis Control and later as Health Commissioner.

William Benjamin Seymour, M.D., has succeeded Dr. Bishop as Director of the University Hospitals, having served under Dr. Bishop as Assistant Director.

CORRECTION AND AN APOLOGY

In listing the "Presidents of the American Public Health Association" in the November, 1947, issue of the *Journal*, we had an asterisk along side the name of Dr. W. A. Evans, who was president in 1917, indicating that he is deceased.

Dr. Evans is still very much alive and since returning to his old home in Aberdeen, Miss., some years ago has given unceasing attention to the development of medical and public health affairs in this state. When the State Board of Health Library was begun some eleven years ago, Dr. Evans contributed over a thousand books from his personal collection, many of them of permanent value. His further interest in libraries is evidenced in the building which he made possible for the public library in Aberdeen. Recently, he helped organize the "Fifty-Year Club"—also called the Half Century Club—for physicians in Mississippi who have been in practice for fifty years or more. Engaged in medical practice and public health work for more than 62 years, he is still active in public health affairs in his adopted state.

NURSES MARRY

Marriage is the chief drain on the nurse force, according to a recent survey by the U. S. Bureau of Labor Statistics. Analysis of 22,000 replies to a questionnaire indicates that fewer than 10 per cent of registered nurses not working at nursing are employed or seeking employment in fields outside of nursing.

The study also revealed dissatisfaction with some conditions of the profession great enough to constitute a serious problem. No provision for retirement, no security against unemployment, present rates of pay, and promotion and pay increase policies were the chief complaints. The average hospital nurse reported further that at least one-fourth of her hours on duty were spent on duties that might be delegated to less well trained personnel.

COMPULSORY PASTEURIZATION ORDINANCE UPHELD

The Fulton County, Georgia, Superior Court has upheld in a court test the ordinance of the City of Atlanta prohibiting the sale of any fluid milk to the ultimate consumer except "Grade A Pasteurized" and "Certified Milk Pasteurized."

The decree of the Judge of the Superior Court of the Atlanta Judicial District may be secured in full from Guy G. Lunsford, M.D., Deputy Director, State Department of Public Health, Atlanta.

VETERINARY PUBLIC HEALTH SECTION TRANSFERRED

The U. S. Public Health Service announces that the Veterinary Public Health Section has been transferred from Washington, D. C., to Atlanta, Ga., where it is now the Veterinary Public Health Division in the Communicable Disease Center. James H. Steele, D.V.M., is Chief of the division.

The Communicable Disease Center is responsible for the investigation of all disease outbreaks in the United States and also carries on demonstration control programs besides applied research. The Veterinary Public Health Division will integrate its program with the overall activities within this Center working in close relation with the Epidemiological and Laboratory Divisions.

CORRECTION IN NEWS LETTER

The Association News Letter dated November 25, 1947, inadvertently listed Dr. Franklin H. Top as Secretary of the Health Officers Section in place of Dr. Joseph G. Molner. Dr. Top was properly listed as Secretary of the Epidemiology Section.

To correct this listing the new officers of the Health Officers Section are herewith repeated:

Chairman—C. Howe Eller, M.D.
Vice-Chairman—Stanford F. Farnsworth, M.D.
Secretary—Joseph G. Molner, M.D.

PERSONALS

Central States

HAROLD E. EGGERS, M.D., has been named Director of the Cancer Control Division of the Nebraska State Health Department. In coöperation with the Nebraska State Medical Association and the American Cancer Society, the division expects to establish a central cancer registry in the state. Dr. Eggers recently retired from the University of Nebraska College of Medicine, as professor of pathology and bacteriology.

JAMES T. GOOGE, M.D.,* has been appointed Medical Director of the Northwestern Branch Office of the Indiana State Board of Health at Valparaiso. He has served in local health work in Mississippi and as Director of Local Health Administration in Florida and Nebraska. Recently he was with the United Nations Relief and Rehabilitation Administra-

tion as a Regional Medical Officer in China.

HENRY F. HELMHOLZ, M.D., Chief of the Section on Pediatrics at the Mayo Clinic, Rochester, Minn., and an outstanding authority on child care, has joined the staff of the UN International Children's Emergency Fund as Chief Medical Consultant for Europe.

HENRIETTA HERBOLSHEIMER, M.D.,† has been appointed Chief of the Division of Hospital Construction and Services, recently created in the Illinois State Department of Public Health. She directed the survey of hospital facilities and developed a long-range plan for hospital construction in the state. Dr. Herbolsheimer was succeeded in her position by RUTH E. DUNHAM, M.D.,† as Chief of the Division of Maternal and Child Health.

LOWELL S. SELLING, M.D.,* has been appointed Consultant on Mental Health for the Florida State Department of Health. He has been Director of the Psychiatric Clinic of recorder's court in Detroit for 10 years and is author of the book, *Man Against Madness*.

JEANETTE SIMMONS,† has been appointed Health Education Leader of the University of Hawaii. She was formerly Health Education Consultant of the Michigan State Department of Health.

Eastern States

EDNA F. CLARK, recently with the New York State Department of Social Welfare, has joined the staff of the Maine State Bureau of Health as Senior Medical Social Consultant in the Division of Services for Crippled Children.

HAVEN EMERSON, M.D.,* delivered the first of the Margaret Barclay Wilson Memorial Lectures of the Department of Physiology, Health and Hygiene of Hunter College, New York City, on October 28. His subject was "Some Factors in Preventing Disease."

GEORGE W. HERVEY, Sc.D., has been appointed Director of the Statistical Division of the newly organized National Blood Program of the American Red Cross, with headquarters in Washington, D. C.

LESLIE W. KNOTT, M.D.,* Surgeon, U. S. Public Health Service, has been transferred to the U. S. Department of State for duty with the American Mission for Aid to Greece. He left for Greece on November 12 and will serve as a liaison officer between the headquarters of the Mission in Athens and the various field units. Dr. Knott has been on leave of absence since November, 1945, serving as Medical Administrative Assistant to ROLAND R. CROSS, M.D.,† Director, Illinois Department of Public Health.

GRANVILLE W. LARIMORE, M.D.,* has been appointed Director of the Office of Public Health Education, New York State Health Department, succeeding BERT R. RICKARDS,* who served for 30 years. Dr. Larimore comes to the department from the American Cancer Society, where he had been educational director.

JOHAN M. LATSKY, M.D.,† specialist in child nutrition on the staff of the Food and Agriculture Organization of the United Nations, Washington, D. C., and formerly Nutrition Officer of the Union of South Africa, has left for Europe to undertake nutrition work in collaboration with representatives of the International Children's Emergency Fund.

CHARLES E. LYGHT, M.D.,* who for the last 5 years has been Director of Health Education for the National Tuberculosis Association, New York

* Fellow, A.P.H.A.
† Member, A.P.H.A.

City, has resigned to join the Medical Division of Merck & Company, Inc., Rahway, N. J.

CHARLES R. SULLIVAN, JR., M.D., has been appointed Medical Director of the Armstrong Cork Company of Lancaster, Pa., assigned to the General Personnel Department. He will have charge of two medical dispensaries for Armstrong plants in Lancaster, and will coördinate health, hygiene, and medical services in other Armstrong plants throughout the country.

ROBERT S. TAGGART, was recently appointed Assistant Sanitary Engineer of National Biscuit Company, New York, N. Y. He has been District Engineer for the New York State Department of Health at Amsterdam for the past 11 years with intervening service in the Sanitary Corps, U. S. Army.

RUSSELL E. TEAGUE, M.D., Surgeon Reserve, U. S. Public Health Service, has been appointed Assistant Professor of Public Health in the University of Pennsylvania and Assistant Director of the University's Phipps Institute.

FRANK E. WILSON, M.D.,* has been appointed administrator of the American Red Cross Medical Services, Washington, D. C., to succeed the late COURTNEY SMITH, M.D., killed in a plane crash last June. Dr. Wilson has been deputy administrator of the services since, June, 1946.

Southern States

WILLIAM E. BELL, is now a senior sanitary engineer in the Bureau of Sanitary Engineering, Arkansas State Health Department.

CLIFTON O. DUMMETT, D.D.S., M.P.H.,† has been appointed as full-time Dean of the School of Dentistry, Meharry Medical College, Nashville, Tenn., at the age of 28. Dr. Dummett received the degrees of D.D.S., and M.S. from the Dental Department of Northwestern University and his M.P.H. from the Michigan School of Public Health.

CHANGES IN HEALTH PERSONNEL IN OKLAHOMA

RUTH ANNADOWN, M.D., was appointed Health Officer of the Hughes County Health Department, effective October 1, 1947. She succeeds MACK I. STANHOLTZ, M.D., now Director of Preventive Medicine, State Department of Health.

MARK R. JOHNSON, M.D., Health Officer of Cleveland County has resigned.

CLARENCE OVERCASH, began duty as Industrial Hygiene Engineer with the Arkansas State Board of Health, Division of Industrial Hygiene, on November 1. He formerly served as an industrial hygiene chemist with the State Board of Health.

A. PACKCHANIAN, M.D.,† Professor of Bacteriology and Parasitology, and Director of the Laboratory of Microbiology in the University of Texas School of Medicine, Galveston, recently read a paper before the Second Mexican Congress of Medicine, on "The Epidemiology, Prevention and Treatment of Leishmaniases."

CHARLES RICHARDSON, JR., M.D., was appointed Deputy State and County Health Officer of Harford County, Baltimore, Md., effective July 1, 1947.

HERBERT B. WISE, M.D., recently became District Health Officer for Lewis, Gilmer, Upshur, and Calhoun Counties in West Virginia. Formerly City Health Commissioner at Charleston, W. Va., Dr. Wise has most recently been connected with the

* Fellow, A.P.H.A.
† Member, A.P.H.A.

Veterans Administration Hospital in Huntington.

Western States

LOWELL E. LAMBERT, became District Sanitary Engineer at the Anchorage Branch office of the Alaska Territorial Health Department on October 1, 1947. During the war, he served in the South Pacific with the Sanitary Corps of the U. S. Army Medical Department.

South America

J. P. FONTENELLE, M.D.,† of Rio de Janiero, a newly elected Vice President of A.P.H.A., was one of seven outstanding statisticians honored by election to membership in the International Statistical Institute at its first post-war meeting in Washington in September, 1947.

Deaths

JOSEPH P. FRANKLIN, M.D.,† Deputy State and County Health Officer of Allegany County, Baltimore, Md., died on June 15, at Sinai Hospital, Baltimore. Dr. Franklin, who had been connected with this department since 1921, served in Baltimore City and in several counties of the Eastern Shore prior to 1927, when he was transferred to Allegany County. From 1941 until 1945 he was absent on Military Leave.

WILLIAM A. O'BRIEN, M.D., Director of Post-graduate Medical Education and Professor of Preventive Medicine and Public Health at the University of Minnesota, Minneapolis, Minn., died November 15 at University Hospital, a few hours after he had suffered a heart attack. He was 54 years old.

DONALD F. ROBERTSON, M.D., Associate Medical Director of Merck & Co., Inc., manufacturing chemists of Rahway, N. J., died on November 8 at the Presbyterian Medical Center, New York City.

* Fellow, A.P.H.A.
† Member, A.P.H.A.

CONFERENCES AND DATES

Air Conditioning Exposition. 8th International Heating and Ventilating Exposition. Grand Central Palace, New York, N. Y. February 2–6.

American Association of Schools of Social Work. Minneapolis, Minn. January 29–31.

American Public Health Association: 76th Annual Meeting. Boston, Mass. Week of November 8, 1948. Southern Branch. New Orleans, La. April 12–14. Western Branch. Salt Lake City, Utah. May 25–27.

American Social Hygiene Association. Annual Meeting. Hotel Pennsylvania. New York, N. Y. February 4.

American Water Works Association. Luncheon, Hotel Commodore. New York, N. Y. January 20.

Canadian Public Health Association. Vancouver, May 18–20.

Massachusetts Public Health Association. Boston, Mass. January 29.

National Health Council. Annual Meeting. Hotel Roosevelt. New York. February 17.

National Social Welfare Assembly. Annual Meeting. New York, N. Y. Week of January 26.

New York State Sewage Works Association. 29th Annual Meeting. Hotel Pennsylvania. New York, N. Y. January 23–24.

Planned Parenthood Federation. New York, N. Y. January 26–28.

Puerto Rico Public Health Association. San Juan, P. R. February 11–14.

United States-Mexico Border Public Health Association. Annual Border Health Conference. Laredo, Texas and Nuevo Laredo, Mexico. March 20–22.

The Professionalization of Public Health

WILLIAM P. SHEPARD, M.D., F.A.P.H.A.

Third Vice-President, Health and Welfare Division, Metropolitan Life Insurance Company, San Francisco, Calif.; Chairman, Committee on Professional Education, American Public Health Association

THREE weeks and four days ago today this Association commenced its 76th year. On September 12, 1872, our forefathers organized the American Public Health Association, which was to become the oldest and largest professional society in the western hemisphere devoted solely to public health. Stephen Smith, then 49, was elected the first president and he lived to participate in our 50th anniversary, 25 years ago.

What has transpired in these 75 years is well written in the annals of the Association. These are virtually a history of public health from the planting of the seed by Stephen Smith and his contemporaries to the sturdy sapling which is our heritage today. It is one of the brightest chapters in the long history of man's upward struggle. It starts with discussions of miasms as the cause of epidemics, goes through cautious reference to the germ "theory" of disease, the first announcement of the discovery of the cause of yellow fever, and on through many other milestones of public health progress.[1]

Gradually there accumulated a rich soil of scientific knowledge and successful procedure. In it the seedling tree of public health took root. Epidemics came under control, cholera and yellow fever are gone from our part of the world, bacteria are known by their morphology and chemistry, rather than as "theories." Typhoid and dipththeria are all but banished. Tuberculosis takes but a seventh of its former victims. All states are in the registration area and the biometrician has become our scorekeeper. Childbirth is twice as safe, and infancy is three times safer. The average life expectancy at birth has increased approximately 22 years since our Association was organized.

This, then, is our heritage. The continued growth of our sturdy sapling, nurtured in the fertile depths of science, will depend upon us who possess it. So that it may furnish amply the seed of tomorrow and so that we may perpetuate and enhance its proliferation, it is important to recognize the various major factors responsible for its growth. They are numerous and important. They include scientific discovery, without which the sapling will wither and die. The extent to which research is supported will be recorded permanently in the yearly growth-rings of our tree. Another essential factor is application of scientific discovery; little is the social gain from knowledge not applied. Still another factor is class-consciousness sufficient to present our aims and needs impressively to the public. There are several other factors essential to the continued growth of our ideals, but others will elaborate upon them. There is one of such importance and such subtlety, however, that it is often overlooked. It is as important as all the others together, and one which I am especially eager to discuss with you after eight years as Chairman of your standing Committee on Professional Educa-

tion. This is the professionalization of public health.

PROFESSIONALIZATION OF PUBLIC HEALTH

Whether we fully realize it or not, public health has become a profession. And it is only in recent years that the crystals of professionalization have begun to appear in the amorphous mass comprising the personalia of public health. We stem from several professions: medicine, dentistry, engineering, nursing, education, social work, and others. That we should all have become further professionalized under the ideology of public health is a phenomenon worthy of note and of great significance to our future. It imposes new dignity and heavier responsibilities upon us. Let us consider its beginnings and its continued implications.

Criteria of a Profession

Plato discussed the professions in his *Republic*, saying that each has a special good or service, not primarily concerned with collecting pay. A profession is "the occupation, if not purely commercial, mechanical, agricultural, or the like, to which one devotes himself, a calling in which one professes to have acquired some special knowledge used by way either of instructing, guiding, or advising others, or of servicing them in some art." To professionalize is to give a professional character to.[2]

The criteria of a true profession have been well defined by Professor Byrne J. Horton of St. John's University. See how well public health meets these criteria:

1. A profession must satisfy an indispensable social need and be based upon well established and socially accepted scientific principles.
2. It must demand adequate pre-professional and cultural training.
3. It must demand the possession of a body of specialized and systematized knowledge.
4. It must give evidence of needed skills which the public does not possess; that is, skills which are partly native and partly acquired.
5. It must have developed a scientific technique which is the result of tested experience.
6. It must require the exercise of discretion and judgment as to the time and manner of the performance of duty. This is in contrast to the kind of work which is subject to immediate direction and supervision.
7. It must be a type of beneficial work, the result of which is not subject to standardization in terms of unit performance or time element.
8. It must have a group consciousness designed to extend scientific knowledge in technical language.
9. It must have sufficient self-impelling power to retain its members throughout life. It must not be used as a mere steppingstone to other occupations.
10. It must recognize its obligations to society by insisting that its members live up to an established code of ethics.[3]

Obviously, public health meets each of these criteria.

Robert D. Kohn, writing on the significance of the professional ideal, elaborates Plato as follows ". . . the professions in the finest sense do actually get their inspiration from a motive other than the money-making motive. . . . The earning of a livelihood is naturally the result of competent practice of a profession. But that is not the prime purpose in the best sense. The prime purpose is the perfection of a service, and the most important reward of that perfection is, not the extent to which it is paid, but the extent to which the service is appreciated by those best competent to judge it, and by those who practice the same profession."[4] This and other ethics intended primarily for the best interest of the public are characteristic of all the professions.[5] In fact, it is placing public interest first and individual gain second, which distinguishes a profession from other occupations. This may give some comfort to those of us threatened by discouragement over low salaries and political interference with our profession. Perhaps we have followed this precept to

our own detriment, but it is probably true that no professionally trained person has ever entered the public health field solely for financial gain.

Evolution of a Profession

It is interesting to observe the developmental steps common to all learned professions and to compare these with the evolution of the public health profession. Usually, a profession first organizes to protect its members against unfair competition. Next, it proceeds to improve relationships between members of the profession. Next, it attempts to establish educational qualifications for admission to practice Throughout the evolutionary process, public needs are placed above professional desires. Professional development in public health has followed these stages, always devoting itself to public needs first. Only relatively recently has it attempted to protect the profession from injustices.

The effort to improve educational qualifications for admission to practice, characteristic of the evolution of all professions, is one of the most recent developments in our Association. It dates back to a Committee on Training and Personnel appointed in 1931 and consisting of representatives from each of our sections. That committee pointed up its objectives as follows:

1. Equal academic standing of public health workers with other professions.
2. Progress through evolution without discrediting present workers.
3. Keeping a suitable list of candidates.
4. Recognition of experience as well as training.

They recommended the following:

1. Definition of the different types of public health workers.
2. Registration of workers now in health service.
3. Setting up definite standards for future reference.
4. A campaign of popular education for better tenure, adequate salaries, and appointment of trained workers in the future.
5. Development of suitable licensure legislation to necessitate the appointment of trained individuals.

THE COMMITTEE ON PROFESSIONAL EDUCATION

To fill this bill of goods, the Governing Council in 1932 authorized a fifth standing committee of the Association to be known as the Committee on Professional Education and gave it a budget of $1,200. Since this committee has had much to do with the professionalization of public health and since it will need the continued support of the Association for the tasks of the future, it seems important to take this opportunity to summarize its work and call your attention to such future problems as are already discernible.

Dr. Waller S. Leathers was Chairman of the original committee, Dr. C. E. Turner was Secretary, and the members were, A. W. Freeman, Lillian Hudson, Clarence L. Scamman, W. G. Smillie, John H. Sundwall, Ralph E. Tarbett, Huntington Williams, Kendall Emerson, and Thomas Parran. No one could have been selected to attract more confidence than the first Chairman, the late Dr. Leathers. A former health officer himself, Dean of Vanderbilt Medical School, a founder of the National Board of Medical Examiners, and a former President of this Association, his calm judicial manner and his democratic procedure saw the committee through its first and hardest years. Such success as the committee has had since that time arises from the confidence of the members of this Association.

FATE OF ITS OBJECTIVES

The committee has proceeded with the original objectives, accomplished some, continued to struggle with some, engaged in new problems as they arose. This seems a good time to check off these original objectives since they were well aimed at our further professionalization.

Types of Workers and Recognizing Experience

The committee has now prepared a total of 20 reports on the educational qualifications of 15 professional specialists. Reports are revised periodically as requirements change. They are first published in proposed form after several revisions in subcommittees. When all members of the Association have had an opportunity to comment, the final draft is submitted to the Governing Council for approval, and reprints of the approved report are sent to large, carefully selected mailing lists. Two hundred and fifty thousand of these reports have been circulated. The current list of approved reports includes Executives of Voluntary Health Agencies, Public Health Dentists, School Physicians, Public Health Engineers, Health Officers, Public Health Nutritionists, Nurses in Industry, Vital Statisticians, Administrators of Specialized Health Activities, Public Health Laboratory Workers, Public Health Nurses, and Industrial Hygienists. Reports in the process of revision include Vital Statisticians, Community Health Educators, Industrial Hygienists, Maternal and Child Health Administrators, Mental Hygiene Administrators, Communicable Disease Administrators, and Cancer Control Administrators. New reports in preparation in the undergraduate field are Public Health Sanitarians and Dental Hygienists. A new report about ready for submission to the Governing Council is on the Field Training of Public Health Personnel.

These reports are serving a useful purpose in three directions:

a. As guides to appointing bodies where their increasing use in job specifications has been most gratifying.

b. As guides to prospective candidates for careers in public health.

c. As guides to teaching institutions.

Each report is clearly stated to be an ideal for ultimate attainment, and it specifically recognizes those who have had successful experience but who have lacked the opportunity for formal academic training.

Thus, the original objectives of "Definition of the different types of public health workers" and "Recognition of experience as well as training" have been kept in mind.

List of Suitable Candidates

The original objective "Keeping a list of suitable candidates" has been done by broadening our placement work into a "Vocational Counseling and Placement Service." This has been made possible by the generous financial assistance of the U. S. Public Health Service.

During the past year alone 688 new openings were entered in the active file and 164 new candidates, a ratio of four to one. The ratio of medical openings to medical candidates was but seven to one. Counseling activities continue to be a highly satisfactory part of the work. There were 376 office interviews during this year, each representing our best effort to aid individuals, to recruit promising young men and women, and to work with related agencies.

For 13 years we have made an annual compilation of students registered in various schools for public health degrees and of the number of such degrees granted. A year ago we saw an unprecedented registration in the accredited schools, but this year the number is even greater. Excluding public health engineers, who have no adequate system of accreditation, there were 660 graduate students enrolled in the 10 accredited schools of public health in the academic year 1946–1947, an increase of 12 per cent over the previous year; 415 graduate degrees were granted, an increase of 30 per cent over the previous year.

To implement the value of our reports on educational qualifications and our list of suitable candidates, and to

assist health departments with more modern methods of personnel administration, funds were obtained from the Children's Bureau, U. S. Public Health Service, and the National Foundation for Infantile Paralysis, for a Merit System Unit. This is staffed by outstanding experts who have prepared modern, objective types of examinations, which have been used 295 times in 33 states with 57 more examinations on order. The examinations now cover nursing, laboratory personnel, sanitarians, health officers, health educators, nutritionists, statisticians, and medical social workers. Examinations are sold at less than cost and are graded in the Central Office. In addition, an expert consultant on personnel administration has been employed to assist health and personnel officers. He has visited 35 states and 9 cities responding to a wide variety of requests for help. A new subcommittee on personnel administration acts as an advisory group to the Merit System Unit.

Academic Equality with Other Professions

The original objective, "Equal academic standing with other professions," has led us through several pathways to important fields. Listing desirable educational qualifications was not enough. Where was such training best to be obtained?

While a few well established schools of public health were offering complete courses and graduate degrees in public health, many other schools were giving various courses which attracted students interested in special fields of public health. Therefore, in 1942 the committee prepared and published in its own name a "Memorandum Regarding Minimum Educational Facilities Necessary for the Postgraduate Education of Those Seeking Careers in Public Health."[6] It was intended to discourage students from taking isolated specialized courses in poorly equipped schools and to point out to schools the undesirability of offering courses in public health unless adequate facilities were available. Although it was well accepted and served a good purpose, it proved inadequate to stem the flood of applicants for training.

Threat of Unsuitable Schools—In the spring of 1945 there were 700 trainees in 41 different schools, many of the schools having poor facilities. Federal funds were available to states for training, yet the U. S. Public Health Service had no way of discriminating between good and poor schools. State fiscal officers and even some health officers resisted sending trainees out of the state when courses in "hygiene" or bacteriology or health (?) education and even degrees in public health were available in local colleges. There was at least one school offering public health degrees by correspondence. Its "faculty" consisted of several authors of leading texts on public health, but they were unaware of their "appointment." At least a dozen universities were contemplating establishing schools of public health, several of them serving identical areas, and some planning no new faculty, merely using existing faculty part time in the new "school."

Growing Pains of a Profession—The time was ripe and the stage was set for the professionalization of public health to go the way of other professions with respect to its schools. Up to this time, except for a few highly trained graduates of the schools of public health, people devoting their careers to public health were largely apprentice-trained (a system not to be condemned, having produced many able workers, but one which is usually surpassed by well organized schooling).

The next, and almost inevitable step, was the development of proprietary

schools. The inevitability of these schools is well described by Herman Oliphant in his interesting study of parallels in the development of legal and medical education.[7]

This is a dark period in the development of most professions. When a new profession becomes recognized as offering a "body of specialized and systematized knowledge" which "satisfies an indispensable social need,"[3] demand exceeds supply and it becomes profitable to train members of that profession as quickly as possible; hence the proprietary school. At first, such schools are good and some remain so. But competition between schools intensifies the temptation to make the training easier and shorter, with the result that less and less competent men are graduated. Licensure at first is tantamount to graduation, thus there is little to stop a flood of indifferently trained members. Once established in a recognized profession, these incompetents are almost impossible to weed out. Despite the fact that they lower professional standards, the more competent and highly ethical members of the profession can only await the grim reaper to help them raise standards of professional performance.

Corollaries in Other Professions—The medical profession is only just recovering from that trying period. Abraham Flexner in his early experience with medical schools said: "The schools were essentially private ventures, money-making in spirit and object. A school that began in October would graduate a class the next spring. . . ." Medical colleges multiplied without restraint "now by fission, now by sheer spontaneous generation." United States and Canada in a little more than a century produced 457 medical schools and of these there were 39 in Illinois, 14 in Chicago, 42 in Missouri, 43 in New York[5]! The situation became so bad that it took the American Medical Association 50 years of denunciation before it could take effective action, and 30 more years of strenuous and courageous work through its Council on Medical Education and Hospitals to bring medical education in this country up to its present high level.[9]

Among the other so-called learned professions, there are still some proprietary schools of law in this country, and in some states candidates are admitted to the bar examinations with no more than apprenticeship training. Minimum standards of training facilities for schools of law are not universally accepted, though Oliphant points out that legal education has roughly paralleled medical education, but with a lag of about three decades.[7]

Education for the ministry in this country represents a wide variety of standards, from the "Full Salvation" school in Kentucky to the great group of Seminaries about the Catholic University of America.[10]

Requirements for the training of teachers are still far from standardized and a large proportion of that profession has had but two years' college training, or less.

Accreditation of Schools of Public Health—This was the direction in which professional training in public health was headed two years ago. Quick action was needed and was taken:

1. The U. S. Public Health Service called upon your Association to organize a plan for accrediting schools of public health.

2. The Association of Schools of Public Health requested that the American Public Health Association undertake the task.

3. The Executive Board, American Public Health Association, found such a function provided for in the By-Laws and referred the matter to the Committee on Professional Education.

4. The Commonwealth Fund, alert to the urgency of the situation, promptly made a grant for a period of three years to provide

staff and to implement plans submitted by the Committee on Professional Education.

5. An "accreditation consultant" was found and engaged to prepare criteria for accreditation of any schools which might apply and to visit all such schools.

Today 9 schools in this country and one in Canada have been accredited for the M.P.H. (D.P.H. in Canada) degree and 7 for the Dr.P.H.[11, 12]

To our knowledge, there are no graduates with the M.P.H. or the Dr.P.H. coming from unaccredited schools in this country. To our knowledge, no school has been coerced into applying for accreditation; all have applied voluntarily. To our knowledge, no able public health career person with good experience but without a degree has been denied an appointment on the grounds that he lacked a graduate degree. So far as we know, today no educational institution is planning to establish a school of public health without considering its ability to meet the criteria for accreditation. Our accreditation consultant has been invited to visit and advise several schools which have such plans in mind.

The accreditation consultant is Professor C.-E. A. Winslow, whose part-time services became available in the fall of 1945. No one could have been better prepared for this difficult task. With characteristic vigor, skill, and understanding, he quickly consulted all the leading schools in preparing the criteria, made the criteria minimum at first, and allowed time for the schools to comply. From the outset it was agreed that too much standardization was undesirable. Schools were encouraged to develop their own methods and special interests so long as they met reasonable minimum requirements. Thus was avoided a "freezing" of free thought and initiative, a warning sounded long ago in this field by Ray Lyman Wilbur, Chairman of the Council on Medical Education and Hospitals of the American Medical Association.[13] Major credit for this remarkable step in the professionalization of public health goes to Professor Winslow, ably assisted as he was by the faculties of the schools and the members of the Committee on Professional Education.

As a corollary to the accreditation task, the Association now knows, thanks to the Haven Emerson studies,[14] and the studies made by George Palmer in the U. S. Public Health Service, approximately how many health officers and other full-time public health personnel are needed now and in the future to serve the nation. We know the approximate replacement rate, we know the capacity of existing schools of public health and, therefore, the approximate number of schools of public health needed ultimately to supply the nation with qualified public health personnel. The number is not great, perhaps five to ten more.

To my knowledge this is the first occasion in modern times that a learned profession has kept its educational house in order as it developed. Since becoming a recognized profession, we have been spared the developmental blight of having our ranks flooded with pseudo-trained people. We have jumped directly from apprentice training to well organized schooling. We know what constitutes a good school, approximately how many graduates we need, and approximately the number of schools needed. Better people will do better work for public health in the future. Public health will flourish unfettered by the handicap of many incompetents in its professional family.

Registration of Members

The original objective "Registration of workers now in health service" presented more difficulties than were apparent to the original committee, but some progress has been made. The directory of members of the Association has reappeared this year in which Fel-

lows are distinguished from members. Admission to Fellowship has become more meaningful since it now requires evidence of real attainment and special qualification. Some feel that "F.A.P.H.A." is sufficient designation of professional status. Others feel that a graduate degree in public health from an accredited school is all that is necessary. At the suggestion of the Committee on Professional Education, the American Medical Association has agreed to give its members who are Fellows of the A.P.H.A. a special symbol in the forthcoming *A.M.A. Directory*.

Considerable interest has developed in a specialty board for certification of medical specialists in public health. The initiative for this must come from the American Medical Association, Section on Preventive and Industrial Medicine and Public Health. At their request, the Committee on Professional Education has appointed two representatives to work with a committee appointed by them to explore the field. The Health Officers Section, A.P.H.A., has an active committee exploring the field, which is working closely with the Committee on Professional Education.

Licensing Members

The objective "Development of suitable licensure legislation to necessitate the appointment of trained individuals" has become less urgent than it was in 1931. The alacrity with which appointing bodies throughout the country have accepted American Public Health Association educational qualifications is as gratifying as it is unexpected. If this continues, licensure legislation with all its cumbersome machinery and shortcomings may be unnecessary.

Public Relations Program

Finally, the objective "A campaign of popular education for better tenure, adequate salaries, and appointment of trained workers in the future" has hardly gotten under way. Much progress has been made in impressing the public with the desirability of appointing trained workers and giving them decent tenure, but less than should have been to insure adequate compensation. In part, this is due to traditional aversion to discussion of earnings in the ethics of our profession. In part, it is due to lack of office staff to undertake extensive study. Most important, it is due to the fact that salaries depend on public appreciation. This, in turn, depends on the relationships between the American Public Health Association and the public. There is great need for a comprehensive public relations program under expert direction. We have pointed out that the Association's public relation policy has never been wholly satisfactory and that because of the "guild relationship" between the Association and its members, we owe them more than has yet been done for their advancement and preservation.

Meanwhile, a Committee on Salary Study is working for the objective of keeping the Association informed on salary inequities and trends. A salary forum has been conducted in the *Journal*, and much improvement has been noted in the past year.

This concludes the story in brief of the work of your Committee on Professional Education over the past 16 years and its efforts in behalf of professionalization of public health. Much remains to be done, but it is heartening to report so much progress on this 75th anniversary. We may well be proud of our successes in the face of discouragements too well known to us all to need elaboration here. We may look forward to the next 75 years with confidence and inspiration.

CONCLUSION

Rich, indeed, is today's heritage in public health. This Association has

seen the public health movement planted and deeply rooted. It has encouraged research, found and disseminated methods of application, raised the level of health knowledge and health conduct of the people, assisted in prolonging life and improving health. Gradually and rather recently we have emerged as a profession. This has resulted from devotion to high ideals, and by keeping our educational house in order. Professionalization has added to the richness of our heritage and brings us new dignity and responsibilities. It is our privilege, as well as our responsibility, to guard and nurture this heritage. May its life even exceed that of the "Sequoia Semper Virens." May its fecundity continue until its leaves spread over the earth and become truly effective for "the healing of the nations."

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Progress in Public Health Administration

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PROGRESS in public health practice often seems tediously slow to the modern health officer. Keen to incorporate new scientific knowledge into the work of his department, he is often frustrated by economic fluctuations, sociological trends, public apathy, or lack of professional coöperation. I am sure he would be encouraged by the reaction of a visitor to his department who by some magic was translated to the present just after taking part in founding the American Public Health Association seventy-five years ago. Activities now considered routine would be almost beyond the visitor's imagination, and our health officer would be struck by *his* amazement at the progress which has actually occurred since the birth of our Association.

In a discussion of this type the temptation is great to list achievements in the broad fields of public health. A catalogue of advances, however, is less valuable than consideration of the forces that produced them. What were the dynamic forces that pushed public health frontiers forward through successive stages, emphasizing in turn sanitation, bacterial diseases, health of the individual, and the social problems of the community?

Leadership has been an essential force in our progress. The pioneer leaders are so numerous that all names of persons living or dead have been intentionally omitted from this discussion, though they would add great lustre. One has only to scan the lists of its members honored by our Association to find them. Is it not a great tribute to the democratic spirit of the American Public Health Association to realize that few, if any, outstanding leaders in public health activities have failed to take a responsible part in the Association affairs? Certainly it is also true that participation in the activities of the American Public Health Association has helped to train leaders. There are many factors in the success of a public health program, but without good leadership any combination of them is likely to result in failure.

Public health has utilized a number of varied professional disciplines to achieve desired results. Whenever new problems required exploration and the development of control technics, public health leaders sought the type of expert assistance required to do the job most effectively. Medicine, dentistry, nursing, and engineering have contributed their share as have education, chemistry, public administration, and veterinary medicine, and the basic social and natural sciences. Few activities related to human welfare have employed such diversified talent.

Education has probably been the most important single tool used in public health work. The early sanitary reformers used it to expose the frightful situations produced by overcrowding incident to the industrial revolution, and to arouse sufficient popular indignation to make clean-up measures matters of public policy. With more em-

phasis on work with the individual, the importance of education increased so enormously that a new profession of health educators using special technics developed. Education of professional personnel by the schools of public health has unquestionably played an essential role in bringing the nation to its present state of public health development. It is just as well to recall that the pioneers in our field had no such formal training, so we may avoid crystallizing our professional education in a set mold which would leave an indelible date upon those stamped with its approval seal. Education in broad public health principles for medical, dental, veterinary, and nursing students, most of whom will be private practitioners, has widened professional coöperation with public health activities. Our Committee on Professional Education guided these movements through many of their most difficult stages.

The philanthropic private foundations have contributed most effectively toward improving public health practice. Early hookworm campaigns in the South led to organization of many full-time local health departments which continue to this day. Demonstrations of various sorts have served as pilot studies to indicate paths along which progress could most advantageously be made. Public health schools were assisted generously, research fostered, and not least valuable are the foundation fellowships to make training of personnel possible.

Research has been fundamental to the achievements of the past seventy-five years. Our Committee on Research and Standards provides a reliable mechanism for appraising current studies and adapting important discoveries to field application. In the National Institute of Health we have an outstanding example of a laboratory devoted to both research and standardization.

The federal government, acting through the Public Health Service, the Children's Bureau, and the Bureau of the Census, has been largely instrumental in improved practice. Its influence will increase as unification of federal health agencies progresses. Early experimentation with the grant-in-aid principle in the short-lived Sheppard-Towner Act became a firmly established program with passage of the Social Security Act of 1935, certainly one of the most important events in American public health development. The matching principle was utilized to draw more and more state and local funds into public health work. The federal health agencies have given a great deal more than finances to state and local departments, including insistence on a merit system for personnel and the invaluable consultation service to state and local departments.

Our system of government leaves the state in a key position, with controlling power over law and regulations; over allocation of state and federal funds to localities; and often with much influence over employment of local personnel. Since local governments are its creatures, the state has primary responsibility for the type of local health units established, and to some degree must supervise the quality of their work.

As the public health movement gained momentum state health departments increased in importance. Now the state health commissioner is the most important link in the chain of official health agencies. Means must be found to strengthen this link and to attract the best men in the field.

People are served best at the local level, and no amount of federal or state activity can replace an efficient local health department. The Subcommittee on Local Health Units of the Committee on Administrative Practice[1] has done an extraordinary useful job in

analyzing the status of local health work, pointing out reasons why one-third the population of the United States is still not served by a full-time local health department. Certain principles which must be followed to provide the best sort of service are set forth clearly. The department too small to support a well trained, full-time professional staff has no legitimate place in the modern public health program. A governmental unit with resources scarcely sufficient to pay the salary of a single public health nurse is actually guilty of wasting its taxpayers' money by insisting on an autonomous health organization. Combinations of city health departments with other departments responsible for the surrounding suburban areas are proving very effective, and city-county consolidation must be developed further. Large metropolitan areas need a coördinating type of health organization, as it is quite impossible for a number of local departments to function effectively when crowded together in a population which lives as a single sociological unit. State health departments are finding it advantageous to provide financial incentives to communities to induce them to consolidate their health work into units of manageable size.

It would be folly to attempt detailed analysis of progress in vital statistics, communicable disease control, environmental sanitation, maternal and child health, laboratory work, and health education. Suffice it to say that today a health department cannot have a balanced program and give its people what they are entitled to without effective activities in every one of these basic fields.

Not all the six major activities listed as basic in *Local Health Units for the Nation*[1] in 1945, would have been so considered even a relatively few years ago. There is reason for thinking the list will be expanded in the future to include types of work now on the public health horizon, such as housing, mental health, accident prevention, genetics, and geriatrics.

Public health workers in America who have shown great interest in the relation of health and housing have been surprisingly few; yet through work of the A.P.H.A. Committee on the Hygiene of Housing and by influence in their local communities they have made their weight felt.

Mental health looms so large as a public problem that inevitably public health must participate in its solution to an increasing degree as preventive possibilities become more clearly defined.

Prevention of accidents, especially those occurring in the home, is largely a matter of education. Using technics effective in other campaigns, some health departments have made a really sincere attack on the problem.

A genetecist said recently, "the field of public health has always been noted for its ability to put to practical use the basic discoveries of the various sciences which have had something to contribute to public welfare."[2] He presented a challenge to us to make fuller use of the already great and rapidly increasing knowledge in the field of genetics.

Epidemiologists are realizing that there are no more epidemics—at least none comparable in severity with those of the past. One of our most senior statisticians has helped us to avoid an excess of self-congratulation on these past successes in communicable disease control in saying public health "is now confronted with a new and enticing opportunity for valuable service brought about by the very success of its previous endeavors."[3] He refers, of course, to the enormous problems of the degenerative diseases created by the ageing population. Immediate administrative questions must be answered

even while we await better methods of prevention from research workers. Certain general principles to be followed in caring for chronic disease patients already have been stated[4]; and in cancer control we are embarked upon a much enlarged program strongly backed by popular support.

Only recently have many local health departments assumed real responsibility for the health of industrial workers, even though the fact that they are congregated in accessible groups makes the mass approach of public health particularly suitable.

Nutrition has already developed to the point where it must be included in the work of any health department worthy of the name. Our laws now not only prohibit adulteration and misbranding of foods, but also require that certain foods must have real nutritive value, even if this can be achieved only by fortification.

When Liverpool appointed the first local medical officer of health in England a hundred years ago,[5] one of his greatest problems was to secure hospitalization for victims of the epidemics ravaging the city. Since then provisions for medical care have been an ever-increasing problem for the health officer concerned with crippled children, tuberculosis and venereal disease patients, as well as victims of acute communicable diseases. Even though he may not have primary responsibility for public medical care in his community, the health officer can scarcely work complacently in an environment where adequate care is not available.

Several communities have found it advantageous to place administrative supervision of essentially all tax-supported medical care under the health department, thereby putting the tax dollars for health purposes in a more or less common fund and making overall planning possible. There is definite evidence that the public is more interested in providing funds for medical care than for preventive work. If the health department is responsible for both types of activity in a given community, it then is in the position of being able to view the whole health needs objectively and can recommend wise apportionment of available funds.

Responsibility for administration of the Hospital Survey and Construction Act of 1946 in most cases lies with the department of health, and in many jurisdictions hospital licensure is becoming a health department duty. The trend is definitely toward assigning medical care administration functions to statutory health agencies as was done in the Emergency Maternity and Infant Care Program. Administrators of the future can now receive training in problems of hospital and medical care administration in several of the schools of public health.

The American Public Health Association has not been silent on the question of the need for a broad national health program, including disease prevention, health promotion, medical care, and rehabilitation. The Subcommittee on Medical Care, a child of the Committee on Administrative Practice, drafted a policy statement adopted in 1944 by the American Public Health Association.[6] Since then this subcommittee has prepared statements concerning chronic illness, the relationship of health departments and hospitals, and other matters related to a national health program for submission to the Association. A most significant aspect of the work has been the joint conferences held with official representatives of the American Medical Association, the American Public Welfare Association, and the American Hospital Association to find common meeting grounds and prepare policy statements which would be strengthened by joint support of the various professional groups concerned. The subcommittee is also

studying medical care programs under health department administration.

The old health department housed in a city hall basement is now an anachronism, and the idea of a health center as a neighborhood building housing health promotion and disease prevention activities finds increasing acceptance. Concepts of what the essential elements of a health center should be vary considerably, and further experimentation is needed to clarify the question. There is general agreement, however, that health department services to the individual should be provided for and that administration for similar services by voluntary health agencies, such as bedside nursing, can profitably be quartered under the same roof. Agreement is less complete concerning the relationship with hospitals, environmental sanitation services, medical care of the sick, and the housing of district representatives of welfare agencies. There is also the unsolved problem of proper relationships between the health center and community centers designed primarily to provide recreation and educational opportunities. A more or less controlled population served by a health center is essential to public health and medical schools for teaching and research.

Regionalization plans for hospital services such as are developing in New England[7] and New York State[8] will demand studies to determine where the health center fits into the scheme. Planners who consider facilities for preventive and treatment activities as completely separate problems fail to grasp the modern trend.

Public administration experts look on public health as one of the few governmental activities which have developed the survey and evaluation technic to a reasonably satisfactory degree. We know the present limitations of these methods, yet few would question the tremendous part they have played in improving the quality and scope of our work in both official and voluntary health agencies. The Committee on Administrative Practice has been the spearhead in testing and improving survey and appraisal methods, beginning with surveys of state health departments in 1915, going on to the urban appraisal form in 1924, and the one for rural areas in 1927. The Health Conservation Contests which began in 1929 did a very great deal to stimulate participating communities to improve their public health work. Later the National Health Honor Roll replaced the Contests and, in turn, gave way to the Reporting Area for Health Practice which continues, the results being compiled in *Health Practice Indices*. From the *Indices* a community can readily determine the current level of established performance in a given field. All of these reporting devices have led to more balanced programs, showing the alert health officer where he was falling short of accepted practice. One of the most valuable features of the reporting devices is that they have been kept well up to date, with the result that a community health program which fails to develop dynamically receives a progressively lower score from year to year.

Americans are always intent on eliminating suffering by the shortest possible course. Thousands of devoted people have banded together into voluntary groups to achieve this common purpose, giving generously of their time and money. These groups met important needs, usually outside the accepted scope of official health agencies, and did superb pioneering jobs in almost every phase of public health. Little by little much of the work of voluntary agencies became the accepted responsibility of health departments. The really vital agencies welcomed this trend, and turned their energies to exploration in new directions.

Independence of action, while one of

the greatest strengths of the voluntary agency, is also a potential weakness. Freedom from political pressure, freedom from governmental influence, and freedom from domination by individuals are essential to success. When, however, the voluntary agency is so independent as to shun participation in community planning and fails to regard the general community welfare as paramount to that of the agency itself, freedom becomes license.

One of the greatest problems today is that of coördinating all forces with special interests in community health. The health council or health section of the council of social agencies functions to prevent duplication of effort and expenditure, overlapping jurisdiction, and insufficient attention to less well advertised programs. It provides a common meeting ground for study, planning, and coördination, operating at various governmental levels. There are definite advantages in having its expenses met by voluntary contributions, though a health council is bound to be relatively ineffective unless official agencies participate actively in its work. The renewed vigor which the National Health Council is now showing, partly as a result of recent broad studies of voluntary health agencies, should be of greatest significance to the whole health council movement.

The new term social medicine is being used increasingly since its introduction in England a few years ago. Some think of it chiefly as a discipline involving research into the factors of social pathology; others as a sort of glorified Valhalla for social workers who would assume new functions in the health program; still others would think of social medicine as being more or less synonymous with preventive medicine or the broadest application of clinical medicine which would emphasize socio-economic and industrial factors as disease producing elements. There are also groups which consider rehabilitation the most typical example of social medicine. Perhaps it is as well to think of the term as a more inclusive one than either the public health, preventive medicine, clinical medicine, or social work currently being practised, and to regard it as a sort of composite into which the best of all the elements designed to promote the health of the people is gathered together. As such, the term social medicine will be most useful in helping us to broaden our planning and widen our horizons.

We need have no shame in viewing the accomplishments of public health during the past three-quarters of a century. It has contributed vastly more to human life and happiness than might have been expected, if one judged by the actual money the people have made available. We would be remiss, however, if we do not convince our constituents of the importance of our job so that the necessary financial support will be supplied to enable us to use our present knowledge fully, to gain new knowledge; to apply new technics as they are proved useful; and to enable workers in the field to maintain a reasonable standard of living.

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Changing Problems Growing Out of the Change in Composition of the Population*

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IN considering changes in the population structure as they affect public health, so much has been said about age changes that to most people they stand as the dominant item in our population pattern. While it is true that modifications in the age composition of the population do seriously affect our public health problems, there are other changes in our demographic pattern that are just as definite and perhaps more profound in their effect. I shall, therefore, consider first the influence of age changes and then proceed to discuss the consequences to the public health program of such demographic forces as industrialization, seasonal migration, migratory shift from rural to urban, and urbanization itself.

As to the age changes, we must first appreciate what the demographer means by a young and an old population. When a population is growing rapidly, as was the case in this country a century ago and to a decreasing extent down to the present time, the population consists of a high proportion of young people, say below 20, what might be called a moderate proportion of people in the adult class from 20 to 55, and a low proportion of old people 55 and above. Thus its problems concern children, and people in the first part of adult life, but not to any great extent the aged. Such a population is called a young population. As the rate of growth slows down, the age proportions automatically shift toward the later years of life. A population that has a relatively high proportion of its individuals in the older years is called an old population. A population may change with passing time from a young to an old population, or conversely, according to the changes in its rate of growth.

In this country we have been moving, during the past century and a half, from a young to an old population. This movement, which was inevitable from the continued decrease in our rate of growth, has been very much accelerated by the decrease in our mortality rates. The fact that this decrease has been greater for the earlier years of life has resulted in a higher proportion of people living to more advanced ages. Thus from the effects of two different forces we have been developing an old population; one of these the steady approach of our birth rate toward our death rate and the other the disproportionately large drop in the death rates of infants and children.

Along with these changes we have seen little decline in the mortality rates of old age. Thus we now have a far higher proportion of our population in the older ages, and they are subjected to death rates that are not very much

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reduced below those of the past. This is resulting in a very rapid development of programs directed at the large problems of middle and adult life, those of cancer, cardiovascular-renal involvements, and psychiatric difficulties.

As an approach to these disorders, it is obvious that we need more research since our present knowledge as to their cure or prevention is very meager. Reach programs along these lines are expanding rapidly, but they are being directed for the most part toward the persons suffering from these ills. Remembering the successes that came from well baby clinics as related to pediatrics, it seems to me that it is time to consider in the field of public health "well adult clinics" related to the problems of geriatrics. Such clinics would not only give the best opportunity to do research in the prevention of these conditions but they would also put vitality into the oft repeated but badly neglected recommendations that people in adult life have reasonably regular physical check-ups. Any plan for comprehensive medical care will of necessity provide clinics of this type, that is, clinics on a population base rather than on a base of illness. It is none too early to have experiments along this line in operation.

A quite different effect of the aging of our population is the shortage of personnel to carry out the various tasks in public health. At the present time, health officers are inclined to think that the difficulty in filling vacant positions comes either from the effects of the war or from the lack of a proper training program. Actually, there is a more fundamental reason behind the man power shortage than is apparent in society. The change in the age composition, which has thrown proportionally more people into the older classes, has changed the balance of working energy available. At the same time more extended social programs in the field of health, other forms of social security and education, together with the demands of our industrial and commercial civilization, are forcing a very sharp competition for the available man power. Demographic findings point to an increase in this competition, and this fact suggests that public health should attempt to broaden its base of training if we are to obtain the workers of the future. Many of the successful professions start their training programs at the collegiate level. I believe that public health should do the same and should extend to at least all state universities a form of training that will furnish the basic group of individuals with public health interests. These people will work either at various lower levels in public health or will go on to more advanced training and supply the professional personnel that we need. This program need in no way jeopardize the present program related to professional training and the upholding of professional standards now being carried out so successfully by the American Public Health Association.

Turning now to demographic changes other than age, I wish to consider first industrialization. The movement of our industrial life toward its present pattern brought about health services both within the industry and at the public health level. These services have two aspects, one specifically directed toward the health hazards of a given industry or job, the other attempting to approach community health or comprehensive medical care of the families of industrial workers by way of the industry itself.

The specific approach by which a health hazard is analyzed and controlled is so obviously valuable as to need no further comment here.

The attempt to approach general public health or medical services out of industry requires consideration, however. Within localities where the bulk of the population is associated with a

single industry there can obviously be a development of public health services or of complete medical services out of industrial medicine. But when, as is the case throughout most of the industrial world, the people of a locality are employed in several industries and these workers are scattered in their living throughout the community, it would be wasteful to attempt to cover the population by approach through its industries. That this approach to health services, which has been suggested by many people, has gone beyond the discussion stage is clear when one looks at the medical service plans set up by certain of our industries, or at an activity like the health services of the Ladies Garment Workers Union, or more strikingly still at the sums for health services that are involved in the Welfare Fund of the United Mine Workers Union.

Sums of this size spent on health services are reflected in prices, and therefore constitute a form of indirect taxation. The health services set up under such money become a public problem and the health officer of the future must face the problem of properly integrating them with public health.

A third demographic force that is important to health workers is that of migration. I refer of course to internal migration, since our foreign migration is at a relatively low level. The internal migration falls mainly into two classes, that of the big seasonal movements for purposes of work or pleasure, and that of the migration that has been going on for decades from the rural to the urban areas.

An illustration of the seasonal migration is furnished by the agricultural workers who move regularly through several states in connection with harvesting; this has been recognized as a federal problem since it gets beyond the province of the particular state in which the workers may be at any given time.

Another problem of the same character that has been increasing in volume arises from the population movements associated with vacations. This again would seem to need more federal attention since difficulties may arise within a state that for their correction go beyond the state boundaries.

The most important migration problem, however, is that which results in a steady increase in the proportion of the population that is urbanized. Coincident with this movement, there has been an astonishing growth in our medical and health knowledge and an ever increasing complexity in the type of services involved.

The rural areas, as a result of these two movements have, in a relative sense, gone downhill in the extent and quality of services available. Recognition of this problem has led to the plan for more rural hospitals that are directly associated with public health, the county health officer being responsible for the direction of the hospital. Action along this line is in the direction of a satisfactory solution to the problem, particularly if some way can be found to arrange for a functional relationship between these hospitals and those of the urban center.

From the urban point of view, the two forces mentioned have created new problems for the health officer. Among these have been not only an increasing complexity in the provisions for sanitation, food, and water, but also an assumption of direct or indirect responsibility for housing.

The most important result that followed from the increase in both density of population and complexity of medical services is the establishment of public health clinics that deal with health problems on an individual and not on a community basis. This has led public health closer to the field of medical care until now it is recognized that it must play its part in this involved problem.

When one looks at this problem in any large urban center, three important groups emerge as the ones that are heavily concerned. They are the medical centers associated with our hospitals, within which we have the most complex of the facilities having to do with health and its preservation; the general practitioner serving the individual, either at home, in the doctor's office, or in one of the hospitals, and the entire complex of public health facilities as illustrated by clinics, laboratory facilities, diagnostic facilities for various diseases, provision of biologicals for certain services, etc.

It is apparent that good health for all the people cannot be provided by any one of these three alone, or by the three together, unless an efficient working relationship can be established. To arrive at an integration of these services, we must have leadership and, while the medical profession has taken and will take an active part in bringing all these forces together, the task cannot be successfully accomplished unless the health officer also takes an active part. Providing wise and constructive leadership in the medical care problem is, in my opinion, the greatest task ahead of the health officer.

The Unfinished Job of Essential Public Health Service

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ON the occasion of our semicentennial celebration in New York City in 1921 we indulged in some prophesy, as well as in a measure of prideful satisfaction in past accomplishment, even as we are venturing today.

Dr. Hermann M. Biggs was the chairman of a small committee to which was assigned the task of declaring what we might expect to achieve for our country if we but provided for *all,* such benefits of the medical sciences as had already been availed of by a minority of the people. Built upon such current experience as Dr. Lee K. Frankel, another member of the committee, could assemble from the broad resources his company commanded, and the reservoir of facts in the Bureau of the Census, a goal was proposed, that without either waiting for new knowledge or applying what we had by other than well tested methods already in effect, the life expectancy of the population could be raised at least to the biblical seventy years. All we had to do was to see that no one lacked the privilege of access to those wisdoms upon which freedom from ill health and early death depended. Such truth is as self-evident today as it was that quarter century ago. As a matter of fact, the women of our country, or shall we say those least ones of our hospital nurseries have today a life expectancy of rather more than 69 years. If we should make Utah's tuberculosis mortality of 16 or less the national rate, and California's infant mortality, Massachusetts's typhoid, Minnesota's syphilis, New York's diphtheria, and Michigan's whooping cough rates prevail across the continent, we could better far the calculated optimism of the practical visionaries of that so recent past, when we believed, temporarily at least, that we could concentrate upon our own affairs, and watch the world enter upon a lustrum of universal peace and well-being.

Now today we challenge ourselves and our people again with similar ambitions, comparable convictions, and no less convincing determinations to make of ourselves a unanimous practical example of putting useful knowledge to work, to make our chosen form of self-government a reality as well as a theory of democracy. While only a minority of our 107,000,000 people of 25 years ago had included in a practical sense within the workaday framework of their local governments the authorized functions, the legal and social responsibilities, and the actual professional and personal services of public health, today that fortunate fraction is a generous majority. In 1922 there were but 35.6 per cent of our population living in communities with full-time local health services (37,620,600). As of July 1, 1947, there were in the Continental U. S. A. not less than 87,442,000 people or 66.6 per cent of us living within the jurisdictions of local health departments, operating with full-time staffs, and directed by medical or otherwise professionally qualified health officers.

This so encouraging a progress in

authority, organization, personnel, and financial support, has been paralleled by creditable gains in human survival and security of comfort and health in the course of life at all ages and for all the varied peoples under our flag. And it must be remembered that health is communicable as well as disease, and that whole states and the very numerous communities within many of them that have always been without and still do lack competent health protection have shared by example and an imitative conduct of life, with those which have been the foci, the nuclei, the production points of a higher quality of living because of their use of the pattern of democracy to make human biology, if not an intellectual religion, at least a worshipful and worthy cult. But, nevertheless, we have not finished the initial, elementary stage of health administration. There still remain some 40,000,000 of us deprived of access to local public health service of even the most elementary scope.

What is ahead? What high endeavor, noble aim, ethical belief, tribute to our faith in the sanctity of the individual, in the right of every man to share in whatever resources bountiful nature and the austerities of science have granted to mankind?

The answer is, that equal opportunity which our Constitution and its Bill of Rights expresses. As long as there are disadvantaged minorities, there is injustice, cruelty, a denial of both the intent and declaration of democracy. If deprivation is required of us, let us share fairly its pains and penalties. When any person or people has the key to a life of greater freedom, then all shall partake of this benefaction.

We have an enormous minority among us who today share not, nor do they enjoy fruits of common knowledge, solely because no one shows them the tree, helps them ripen the fruit and secures to them the harvest. That is what representative civil government was created to do. We can have our democracy if we understand how to put it to work. Lacking that will and deed, what other and lower form of social order shall we fall into?

Today's choice of universal access to the good things of the medical sciences is a privilege, an opportunity or an obligation as you may prefer to phrase it, but as I see it there is only betrayal and a pitiful humiliating confession of cowardice, a sort of popular poltroonery if we do not accept the challenge and complete our unfinished task. Have we so little faith in the facts upon which, not only a tolerable pittance of life depends, but in those that make of human days a great parade, one glorious experience in well-being after another? Are we content to be two-thirds free and one-third slave to ignorance of the laws of self-protection? Can we reconcile the good that comes from an excellent local health service with the evil that stalks unrebuked, unhindered, inhuman among those who are not awake to the calamities that follow a healthless form of local government? Forgive me if I use strong words. I mean them.

If I were to be stricken thoughtless and voiceless tomorrow, today shall be given to a warning that, only when every person, every home, village, town, county, or locality in our United States has provided within the accepted duties and work of local government public health services in a competent manner, shall we be free and just to each other. Only then can we of the American Public Health Association, a nationwide professional conscience of preventive medicine, consider ourselves full-grown and mature.

There is an old and perhaps an understandable habit of thought and manner of action among us of the United States of America that appears to me to betoken a shiftlessness of purpose, a skipping from one half-built bridge to

the next, a slovenly performance of works intended to be of enduring worth. We of the serious guild of public servants, guardians of the cause of nature in an age of gimcracks and patent medicines; we, the agents of human biology where the time and patience of evolution are our main resources; we the stabilizers of the soaring facts of preventive medicine into its practice by individuals and the populace; we, I say, who hold the key to unlock the potential strength and quality of generations yet unborn; we allow ourselves and our public functions to be diverted, by each new pressure group of financially plausible promoters, away from the basic job of essential public health administration. These must be delivered day by day, house by house, family by family, and in every shop and industry. This is no one's else responsibility and cannot be postponed, diluted, displaced, or set aside for any new and seemingly urgent thesis, pushed upon us because of its momentary publicity or social popularity.

When we have builded a temple of health to shelter and include every human being who chooses to be a member of the great community devoted to our form of government within the boundaries of our states, and have erected its four walls and floor and roof as symbols of the six principal structural elements of a modern health service; then, and not until then, should we devote our narrowly limited resources of dollars and doers of public health, the competent personnel, to the decoration of the chambers, to the addition of new apartments or to new projects of secondary and doubtful importance.

Are we to let the finishing of our first, our major, our most productive of projects for putting knowledge to practical test and use, be a matter of accident, of "happenstance," of convenience of partisan politics or of property holders? Is any property right a matter of such urgency as the right to health of man, his wife, their children? What is the reason, whence the inertia, why the delay? We have courts for every squabble, for each variety of criminal whether individual or corporate. Schools are for all children (except the 13,000 of the Navajo tribe). There are jails over the land, and multitudes of churches, but there are 40,000,000 people without local health departments. These, our own people, our neighbors and friends, are in 43 states, scattered over 1,697 counties, and they inhabit even cities of considerable size. This is primarily a rural problem and affects people who also often lack hospital facilities and specialized medical attendance.

Whose job is it to spread the all too thin protecting veneer of local health services over the whole country and all its people? Surely not that of the federal government. Quite as certainly however, it is at the door of the state departments of health. In fact, one cannot imagine a more pressing duty for each state health department than the making of a plan, the setting of performance standards, sharing in tax support, if need be, and everlastingly dinning the need and the opportunity into the ears of officers of local governments, so that communities of suitable size shall employ persons of competent qualities to carry on the essential health functions to ensure total coverage of area and population with the potential blessings of human biology.

Need I detail the six functions? Can you bear a repetition of the well known and exclusive foundation duties of any local health service the world round? Were the declarations of organization and functions of public health issued by the American Public Health Association only muttered mouthings of a lot of professional parrots, or are these ingrained convictions, the substance of our faith in our science at least as much as products of our reasoning? Confucius

and Marcus Aurelius wrote no more numerous aphorisms to guide men's conduct than has the A.P.H.A. pronounced resolutions of good intent for the world to forget.

There can be no local health department, without a place of business, spacious, clean, light, pleasantly welcoming, convenient to the market place and center of local government. Here there must be means of communication with all the people served, and someone with an ear cocked to hear a question, and to respond to a call for help. Here are to be found the servants of science, physicians, engineers, nurses at least, and their handmaidens of desk and typewriter.

They are to be led, directed, encouraged, taught, praised for doing admirably the six jobs without which even the name of health department is a fraud upon the public.

1. Recording of births, sickness and deaths, their verification for completeness and accuracy, their tabulation, interpretation, analysis and publication.

2. Control of all communicable diseases affecting or threatening the people in the area.

3. Making of the environment of man one of sanitary safety, this to include the protection of foods, drinks, their processing and serving, storage and transportation, the human occupancy of premises and the conditions surrounding all employed persons.

4. Provision of diagnostic, analytical, and other laboratory procedures, essential for early and accurate diagnosis of at least the locally important communicable diseases, and to give scientific basis for control of environment.

5. The hygiene of human reproduction, growth and development, safeguarding women and children as society's agents of population replacement and improvement, from the selection of the mate for marriage until the offspring of parents have in turn attained their own biological maturity.

6. And finally, the provision of information as to such laws of living matter and the conduct of life as will bring the greatest likelihood of useful happy living free from man-made or other preventable causes of ill health and death.

These and no less and no more should be the minimum goal of our Association, as an inescapable obligation of every unit of local government, alone or in coöperation with its neighbors.

There need not be more than 1,200 of such units to cover our nation.

More may be found temporarily convenient, but this will waste expensive and limited professional leadership, and will lower by just so much the efficiency and prestige of these local health units.

To make this a reality demands of you and your respective state and local governments, determination, a will to succeed, imagination, resourcefulness, patience, and a sense of humor to make us laugh at our present ridiculous appearance our partial distribution of public health services, before the scrutiny of an increasingly critical public, at home and around the world.

Surmounting Obstacles to Health Progress

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DURING the past two months, I have had the opportunity, in Geneva and in Buenos Aires, to discuss current health problems with leading health officials of about 30 countries. Everywhere governments show increasing concern for the prevention of disease and for adequate medical care of their people. Today no country is content with even the substantial contributions which public health has made to the well-being of its citizens. The challenge of the present and the future is too great.

In general, health progress in each country seems directly related to its economic, social, and educational status. Exceptions are found in the most backward countries where relatively more emphasis is given to health needs in order to bring standards up to a bare minimum.

Among representatives of all countries, there is general agreement that we are in a period of transition as regards the role of public health in modern society. Emphasis has shifted from the traditional concepts of giving alms to the sick, of environmental sanitation, and of quarantine, to the problems of providing adequate health facilities and services to all who need them. We are experiencing a progressive development of personal health services for the prevention of disease such as venereal disease and tuberculosis, availability of medical care and medical aspects of social security. This broader scope of public health activity belongs to an age when dynamic new scientific frontiers are opening and new concepts of social responsibility are emerging throughout the world.

There was of course general agreement that nowhere have we achieved the ideal for which we strive—namely, to provide in each country, and throughout the world, an equal opportunity for health for everyone—without regard to race, color, economic condition, religious or political belief. The word "health" is well defined in the Constitution of the World Health Organization as "a state of complete physical, mental and social well-being." To attain this ideal we must use our material resources, more equitably than we have done heretofore, toward the objective of conserving our human resources—our people's health.

Practically every nation in the world, in signing the Constitution of the World Health Organization, has accepted the principle that world health, like world peace, is indivisible and that all nations should join in attaining it. This requires that each nation do everything possible to improve the health of its own people, and join with others in the task of rebuilding the health of a shattered world.

President Truman, speaking last month in Rio de Janeiro to the conference of foreign ministers, endorsed that principle by saying that we in the United States "are trying to bear with dignity and decency the responsibility of an economic power unique in human history." Similarly, here within our own borders, we have a comparable re-

sponsibility for judicious use of our technological power, in which the medical and health sciences are outstanding. This responsibility alone would constitute a mandate to equalize the opportunity for health for all our citizens. To this is added the sanction of the well known humanitarian zeal of the American people. Together they place on us as a nation, a cardinal obligation to achieve equitable health opportunity within the framework of a sound national health program.

Adequate medical care for all must be the cornerstone of any program designed to meet the health needs of the nation, and this means that medical care must be based on need for services rather than on ability to pay. One of the first problems we must solve, therefore, is that of finding a more efficient method of financing medical care. This problem has produced more thought and discussion than any other single health issue within my memory. Fortunately the areas of agreement have now assumed a dominant role. It is generally accepted that means must be found to make adequate medical care available to the entire population. Leaders in Congress, representatives of professional, national, and official health organizations all are working toward a legislative vehicle designed to help us reach this common goal.

It may not be possible to accomplish all the objectives of a national health program in one single comprehensive act. The history of social legislation in our country has been an evolutionary process made up of one advance after another, each contributing to a final result. While the Public Health Service believes that the health needs of the nation can be met most effectively and in the shortest period of time through a broad program financed in part by national health insurance, because of practical considerations involved we may need to accept a succession of limited enactments. The important thing is to start now, to be sure that each step is in the right direction and that none creates obstacles or vested interests which would impede further progress.

In the last ten years we have seen the evolutionary process applied to the principle of federal grants-in-aid to states for health activities. A succession of Acts has provided an increasing amount of federal funds as the program has shown its value and workability. The Congress in 1936 launched the program with an initial appropriation of less than 15 million dollars to the Public Health Service and the Children's Bureau. During the current year, the Congress has made available for these purposes more than 135 million dollars (including the 75 million authorized for hospital construction). Experience has shown that federal aid has strengthened state and local programs for maternal and child health, venereal disease, tuberculosis, cancer, and mental hygiene as well as for general health. Federal coöperation has stimulated higher standards, increased the sense of local responsibility, and actually encouraged larger local and state funds for health purposes.

As to the future, I think we could expect even greater progress if we revise the several separate grant programs so that the federal government is committed on a predetermined ratio (weighted heavily in favor of the poorer states) to match whatever amounts the state and local governments spend for their health services. This would make it possible for states to strengthen existing local health units and to establish full-time, competently staffed departments in the many communities and counties which now lack them. The majority of these departments in operation are overworked, understaffed, and inadequately financed. Newer programs, such as mental health and

cancer control, are being added to the heavy load of traditional public health programs. Responsibilities are fast bringing local health service to the breaking point. This bulwark of the nation's health must be equipped to handle its present and prospective tasks more effectively.

The American Public Health Association, by setting standards of adequacy for local health units and by mobilizing support for this program, has earned the gratitude of all who labor in the health field. I have been particularly pleased with reports from the recent conference in Princeton, sponsored by this Association and attended by leaders of lay groups throughout the nation. It should pay dividends for years to come in mobilizing an informed public for effective action. However, providing modern health services for the one-third of our counties and the 40 million of our people now lacking them, remains unfinished business of top priority.

The Hospital Survey and Construction Act represents an important forward step in national health policy. It requires each participating state to develop a program of hospital (and health center) construction which will provide the necessary physical facilities for serving all the people. If this objective is to be reached, some improvements to the Act are needed: (1) a larger federal percentage; (2) a longer period of operation; (3) special provision for neediest areas; (4) some provision for hospital maintenance.

Even though we remove economic barriers to medical care and provide physical facilities necessary for health, the people will not receive good health care unless we have a health army in adequate numbers, properly trained, skilled in the varied technical disciplines, and equitably distributed throughout the country. In the administration even of present limited health programs, the greatest obstacle has been personnel shortage.

Yet at the present time we have no national policy in regard to increasing our supply of health personnel and no satisfactory study as to the extent of the need—though all agree there is a need. Surely immediate action should be taken to establish a national policy in this field as has been established in the hospital field.

It is my own opinion that in order to have the number of physicians needed to give adequate medical care to all the people by the year 1960, let us say, we must begin now to increase by 50 per cent the annual output of our medical schools. The shortage of dentists is even worse. A definite opinion as to the extent of that shortage must await determination of the amount of dental care which can be delegated to subsidiary personnel. As for nurses, the shortage is too obvious to need elaboration. I see no possible way of meeting these needs except by substantial federal aid, both to institutions for physical expansion and operation, and to individuals in at least the three categories, doctors, dentists, nurses.

Even though we share the cost of medical care, apply fully all known preventive measures, provide all of the physical facilities, hospitals, etc., which are needed, and staff these several programs with competent personnel, there is a substantial volume of sickness, disability, and premature deaths which cannot be prevented or alleviated, unless or until we add to our present volume of life-saving knowledge.

We can record dramatic results in saving the lives of the young, yet life expectancy among those of us who survive to 50 years of age has increased little during this century. Deaths from the degenerative diseases—especially those of cardiovascular origin and from cancer—continue unabated, and due to the aging of our population comprise an

increasing proportion of the total deaths.

When the American Public Health Association was founded, its members were concerned with sanitation, quarantine of acute infections; later with immunizations; then with personal health services. Now we must be more concerned with expanding the frontiers of knowledge, with substituting exact science for primitive art.

The President's Scientific Research Board recently has made a significant summary report on "Science and Public Policy" which later will be expanded in more detailed volumes. The summary report outlines research needs, and recommends what the federal government should do to meet the challenge of science, and assure the maximum benefits to the nation and to its people. It draws a broad framework for medical research.

I quote a few excerpts:

"The rapid expansion of research and development in health and medicine is a matter of great urgency to our people. . . .

"Research and development in medical and allied sciences, like basic research, seldom yield direct financial returns. Its financing must, therefore, largely depend upon either charitable gifts or tax funds. Neither the medical schools nor the foundations are likely to be able to increase their own expenditures greatly. . . . The expansion in medical research here recommended can be accomplished only by raising our federal expenditures from their current level of about $28 million to at least $200 million by 1957. It is impossible to calculate the benefits of such a program in terms of the improved health and productivity of our people. But there is no doubt that the investment will be repaid many times over."

The eight basic recommendations of this report are of sufficient portent to bear repeating:

1. We should increase our annual expenditures for research and development as rapidly as we can expand facilities and increase trained man power. By 1957 we should be devoting at least *one* per cent of our national income to research and development in the universities, industry, and the government;

2. Expenditures for basic research should be quadrupled and those for health and medical research tripled in the next decade;

3. The federal government should support basic research in the universities and nonprofit research institutions at a progressively increasing rate, reaching an annual expenditure of at least $250 million by 1957.

4. A National Science Foundation should be established to make grants in support of basic research.

5. A federal program of assistance to undergraduate and graduate students in the sciences should be developed.

6. Federal assistance to universities and colleges should provide laboratory facilities and scientific equipment now, while scientific personnel is being trained.

7. A Federal Research Committee should be established, composed of the directors of the principal federal research establishments, to coördinate and develop the government's own research and development programs.

8. Every effort should be made to assist in the reconstruction of European laboratories as a part of our program of aid to peace-loving countries, on terms which require free international exchange of scientific knowledge.

Of particular interest is the suggestion that a National Science Foundation should become a part of the prospective new Department of Health, Education and Security, and that every government agency authorized to conduct research should likewise be authorized to give grants-in-aid to nonfederal research institutions.

The National Science Foundation as envisioned in the report of the President's Committee would strengthen and coördinate but not replace research activities now conducted by many govern-

ment agencies. In respect of health and medical research, the President's Committee agrees with the basic recommendations of the American Public Health Association adopted three years ago.

The present research program of the Public Health Service with its broad legal authority seems to have set the pattern which the President's Committee recommends for federal research generally.

Currently the Public Health Service is spending $30 million annually for research, a large proportion of it in the form of 658 grants to institutions throughout the country. The grants are made on the recommendations of three advisory councils aided by more than 250 leading scientists expert in some phase of research.

During the current year, the Congress has appropriated funds specifically for research in mental health problems and for training of mental health personnel. Also, for the first time, substantial appropriations for cancer research are available for grants to construct research facilities. In order to ensure continuity of research programs, the funds are available until expended. There is every reason to hope that next year we shall have comparable authority for all of our research grants to outside institutions.

The President's Committee reports "In the war, the laboratory became the first line of defense and the scientist, the indispensable warrior . . . Scientific discovery is equally the basis for our progress against poverty and disease."

Let me summarize the situation as I see it. We must use our national resources to *remove* the economic barriers to good medical care by sharing the costs; *expand* and perfect our present program designed to provide hospital and related facilities available to all of the people, state by state; *train* the added doctors, dentists, nurses, and other health personnel needed to give health care to all and compensate them adequately; *provide* for every county a modern health department staffed to furnish for everyone all needed preventive health services; *develop* a program of research, granting funds, insuring continuity, training research brains, and creating research facilities.

This nation has "an economic (and technological) power unique in human history." Given the will to use this power for human health comparable with our will to win the war, and we shall win this important sector of the peace. We can attain for ourselves and help all of the world to obtain a standard of health "unique in human history."

Poverty and Disease

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A CENTURY ago, John Simon, in his First Annual Report as Health Officer of the City of London, had this to say about the subject which has been assigned to me this afternoon: "Last, and not least, among the influences prejudicial to health in the City of London, as elsewhere, must be reckoned the social condition of the lower classes; and I refer to this the more especially, because often, in discussion of sanitary subjects before your Hon. Court, the filthy, or slovenly, or improvident, or destructive, or intemperate, or dishonest habits of these classes, are cited as an explanation of the inefficiency of measures designed for their advantage. It is constantly urged, that to bring improved domestic arrangements within the reach of such persons is a waste and a folly; that if you give them a coal-scuttle, a washing-basin, and a water-closet, these several utensils will be applied indifferently to the purposes of each other, or one to the purposes of all; and that meanwhile the objects of your charitable solicitude will remain in the same unredeemed lowness and misery as before. Now it is unquestionable, and I admit it,—that in houses containing all the sanitary evils which I have enumerated—undrained, and waterless, and unventilated—there do dwell whole hordes of persons, who struggle so little in self-defence against that which surrounds them, that they may be considered almost indifferent to its existence, or almost acclimated to endure its continuance. It is too true that, among these classes, there are swarms of men and women, who have yet to learn that human beings should dwell differently from cattle; swarms, to whom personal cleanliness is utterly unknown; swarms, by whom delicacy and decency in their social relations are quite unconceived. Men and women, boys and girls, in scores of each, using jointly one single common privy; grown persons of both sexes sleeping in common with their married parents; a woman suffering travail in the midst of the males and females of the several families of fellow-lodgers in a single room; an adult son sharing his mother's bed during her confinement;—such are instances recently within my knowledge (and I might easily adduce others) of the degree and of the manner in which a people may relapse into the habits of savage life, when their domestic condition is neglected, and when they are suffered to habituate themselves to the uttermost depths of physical obscenity and degradation.

"Contemplating such cases, I feel the deepest conviction that no sanitary system can be adequate to the requirements of the time, or can cure those radical evils which infest the underframework of society, unless the importance be distinctly recognized, and the duty manfully undertaken, of improving the social condition of the poor."

We have made notable progress in the amelioration of such conditions since John Simon assumed his duties as Health Officer of the City of London. Yet the basic problem to which he referred is still with us. His moving words may still furnish a useful text for

a discussion of what is perhaps the most urgent problem of present-day public health. Let us review just a few of the hundreds of statistical examples of the relation between poverty and disease in the present century.

In 1908, an epidmeic of measles occurred in Glasgow and the Health Officer presented figures (Table 1) with regard to the incidence of the disease according to the size of the living quarters occupied by the families exposed.

TABLE 1

Size of Family Dwelling Unit	*Measles in Children under one year of age per 1,000 such children:*	
	Case Rate	*Death Rate*
One Room	125	27
Two Rooms	102	15
Three Rooms	28	3
Four Rooms	11	1

The case incidence was ten times as high in the one room tenements as in the four-room tenements; the death rate, 27 times as high.

To take an example of quite a different group of diseases, the U. S. Public Health Service in 1920 made a study of pellagra incidence in the families of a group of southern cotton-mill villages with the results shown in Table 2.

TABLE 2

Family Income per Adult Male Unit per Year	*Adjusted Pellagra Case Rate*
Under $144	41
144–192	25
192–240	14
240–336	5
Over 336	2

It was in 1925 that the U. S. Children's Bureau presented figures for infant mortality rates for eight American cities classified according to family income. In the families with incomes over $1,250, the mean rate was 64 per 1,000 births, in the families with incomes under $500, it was 151 per 1,000 births.

You may say that this is still ancient history and that we have effectively controlled measles and infant mortality and pellagra by specific scientific procedures so that, in spite of poverty, the toll of these causes of death and disability has been reduced to a relatively low level. This is a sound contention; but it tends simply to reënforce the argument which I present to you. This argument is that, having controlled with marvelous success those factors in morbidity and mortality which are susceptible to direct control by specific sanitary and immunological and epidemiological and nutritional procedures, we are faced with a residuum of sickness and death which is not amenable to such specific controls

TABLE 3

*Ratio of Annual per Capita Volume of Disability for Low Income Groups to that in the Highest Income Group, according to Specified Diagnosis Classification.**

	Income status of family			
		Nonrelief		
Diagnosis	*Relief*	*Under $1,000 per year*	*$1,000 to $1,500 per year*	*$5,000 and over*
Tuberculosis	875	388	250	100
Orthopedic Impairments	420	283	175	100
Rheumatism	369	213	138	100
Digestive Diseases	340	180	114	100
Nervous Diseases	287	204	135	100
Degenerative Diseases	268	156	109	100
ALL DIAGNOSES	266	166	121	100
Diagnoses not elsewhere grouped	261	160	127	100
Accidents	221	173	129	100
Respiratory Diseases	189	121	91	100
Infectious Diseases	124	93	93	100

* Based on rates adjusted to the age composition of the Health Survey total white population.

These tables are taken from *National Health Survey, 1935–1936, Preliminary Reports.* Disability from Specific Causes in Relation to Economic Status, Sickness and Medical Care Series. *Bulletin 9, U.S.P.H.S.*, Washington, 1938.

and in which poverty remains the outstanding causative factor.

The problem is well illustrated by the most recent and most impressive body of statistics at our disposal, the results of the National Health Survey of 1935–1936. I cite, as my fourth and last example, one table from the report of this study of some 80,000 white male workers in eight American cities only ten years ago.

It will be noted that families with an income below $1,000 per year have nearly four times as much disability from tuberculosis, nearly three times as much disability from orthopedic impairments, and approximately twice as much disability from rheumatism, digestive diseases, and nervous diseases as families with incomes over $5,000. For relief families, the ratio rises to nearly ninefold for tuberculosis, and fourfold for orthopedic impairments, between threefold and fourfold for rheumatism and digestive diseases. Considering all causes of disability together, the group with incomes under $1,000 shows 66 per cent more disability and the relief group shows 155 per cent more than the families with incomes over $5,000.

We do not know the exact balance of cause and effect in this striking correlation between poverty and disease. No doubt some families are on relief or have low incomes because they are physically handicapped from the start. No doubt others owe their handicaps to undernutrition, to bad housing, to lack of medical care. What we can say with certainty is that poverty and disease are related and that, in this relation, we face a major challenge.*

How large is this problem, from a quantitative standpoint? We are accustomed to think of poverty and destitution as problems of Asia and Africa, and today—in the terrible aftermath of two world wars—in Europe too. Perhaps we recognize that poverty exists in the Appalachian Mountains and the deep South; but surely American cities are prosperous and only a few exceptional unfortunates are in need.

Let us face the facts even at the cost of a few more statistics.

The analysis of family income data is a complex task, full of pitfalls for the unwary. Income levels and the cost of living vary from year to year; but this is the least of our troubles. The two major factors of error are to be found in the definition of a "family" and in the comparison of "farm" and "non-farm" groups. Many tabulations include single persons living alone as "families"; and cash income is a relatively meaningless figure for a family living in its own farmhouse and growing its own food. It has been possible, however—after a considerable search of the literature—to obtain data free from these two sources of confusion.

The most exhaustive study of this kind is that made by Leven, Moulton, and Warburton for the year 1929. Table 4 below and Chart 1 represent the income distribution of non-farm families of two persons or more.

TABLE 4

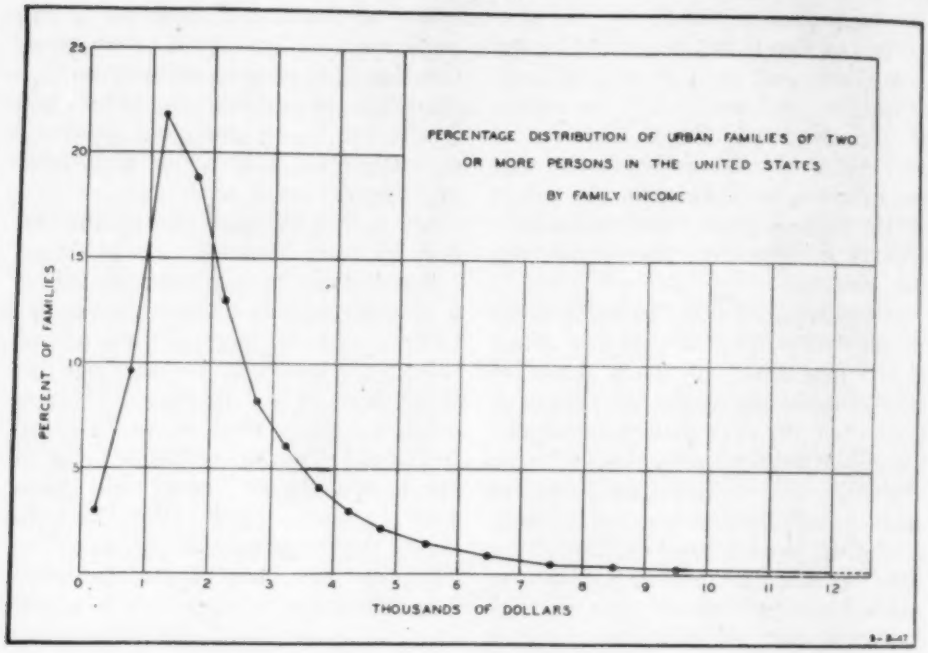
Distribution of Non-Farm Families of Two Persons or More by Family Income, 1929

Family Income	*Per cent of Families*	*Family Income*	*Per cent of Families*
Under $500	3.0	$ 4,500–5,000	2.2
500–1,000	9.6	5,000–6,000	2.9
1,000–1,500	21.9	6,000–7,000	1.8
1,500–2,000	18.9	7,000–8,000	1.1
2,000–2,500	13.0	8,000–9,000	0.9
2,500–3,000	8.2	9,000–10,000	0.6
3,000–3,500	6.1	10,000–15,000	1.4
3,500–4,000	4.1	15,000–20,000	0.5
4,000–4,500	3.0	Over 20,000	1.0

The first thing that strikes one is the extreme skewness of the graph with its peak at $1,000–1,500 and the enormous spread to the few families at relatively high income levels. It does not look

* A recent study by Evans and Russell in England shows that in that country the infant mortality rate for the third to the twelfth month of life rises steadily as economic status falls—from 6.7 for the most prosperous, to 31.4 for the least prosperous group.

CHART 1



like the normal graph of most biological phenomena.

The description given by Karstens a quarter of a century ago is still not inapt. He said:

"The range of modern incomes baffles the imagination. It is impossible at the same moment to visualize the very small incomes of the great mass of families and the large fortunes enjoyed by a small handful of them. The variation is too great, both as to size of incomes and number of families.

"Imagine a round field, one mile across, in every square foot of which one plant is growing. The plants, about twenty-two million in number, will represent approximately the families of the country, each plant for one family; and we can assume that the height of the plant indicates the annual income of the family, one foot for each thousand dollars, and that the tallest plants are clustered together in the center of the field. Let us start at the edge of this circular field and walk the distance of a half mile, to the center, observing the height of the plants which we pass on the way.

"For more than three-quarters of our walk we can only speculate on the height of the plants we pass, for lack of any definite information from any source. If the tax-collector catches even the majority of those who have incomes of three thousand dollars or more, none of the plants thus far will reach up a yard from the ground. On the basis of the incomes he does report, however, we can make intelligent speculations, one of which is that the first half of our walk will be among plants puny and ill-nourished, reaching about our ankles. At 300 yards from the center we reach what is called the 'upper tenth,' the plants growing nearly to our knees. At 200 yards from the center they rise overhead ten feet from the ground, at 100 feet they reach up thirty feet, at 50 feet they tower a hundred feet high. At thirty feet from the center they climb to two hundred feet, at 15 to five hundred, at 9 to a thousand feet high. These last represent nearly 300 families whose income exceeds a million dollars a year. In the center of these, extending far out of sight about a dozen rise to heights of which we know little except that they stretch at least a mile into the sky."

From a practical standpoint, the message of the figures is clear. More than one-third of the non-farm families of two persons or more—a "third of the

nation," had family budgets in 1929 below $1,500. Yet the minimum budget for decent subsistence for an average family was more than that amount. A special census survey in 1944 (with somewhat but not greatly higher price levels) of 1,700 consumer units in cities of over 2,500 population showed that families below the $2,000 level were incurring debts or obtaining relief; and that only above $2,000 could the family books balance.

Nor is the prospect for the future bright. Dewhurst and his associates in the most recent study of the problem of "America's Needs and Resources" reports that, in 1941, 38 per cent of urban families had family incomes under $1,500 and the estimates which they make for 1950 place 29 per cent of urban families in this class. The authors expect that in that year the 29 per cent of families below $1,500 will divide among themselves 8 per cent of the total income of city dwellers; while the 5 per cent of such families with incomes of $5,000 and more will enjoy 39 per cent of that income.

The disease of poverty affects a proportion not far from one-third of our population; and it bears acutely on the more than one-sixth of the population below the $1,000 level. Surely this is a problem deserving the very serious consideration of the health administrator.

Remedies for this disease of poverty may be sought along two lines, by competent expert social work in the adjustment of a given family to an existing environment, and by prompt and adequate relief of those families which—in spite of the best social case work—cannot maintain the fundamental needs of normal living. The health officer should be interested to see that his community has adequate resources of this kind.

After all, however, social case work and material relief are examples of clinical sociology, comparable to the practice of curative medicine. They are procedures applied after the event. But you and I are public health workers. We are interested in basic prevention; and, in the field of preventive sociology, there are two more fundamental approaches to the control of the poverty disease.

The first of these is, of course, an increase in total material resources. The more food and clothing and houses you have in a given country, the less acute is the problem of poverty.

The vast improvement in living conditions since the introduction of steam power and the Industrial Revolution has been due to the fact that, with machines, one man can perform the work of 500 or 1,000 men laboring with their hands alone. The Age of Electricity has succeeded the Age of Steam; and today the ultimate possibilities of the utilization of atomic energy seem almost limitless. The use of new synthetic substances, such as plastics, may make it possible to build our homes of something better than sticks and stones and to clothe ourselves in fabrics more effective than that contributed by the sheep. The basic tasks of food production are similarly being improved by irrigation and methods of dryland farming by new fertilizers and by new procedures for the control of insect pests, as well as by the use of tractors and other mechanical aids to cultivation. Methods of food preservation and methods of transportation have provided potentially effective protection against temporary or local famine.

Technology, however, includes more than chemistry and physics and engineering, in the narrow sense. There is a broader social technology, or social engineering, which we call "Planning"; and the most perfect example of this art is the Tennessee Valley Authority. Before the second World War, the T. V. A. was the one thing in the United States which thrilled intelligent European visitors to our states. They could scarcely understand our excitement about the "New Deal." Most of its policies were

belated attempts to catch up with progress toward sound social adjustment which such countries as England and Holland and Scandinavia had long ago accomplished. But the T. V. A. was something new. It represented the best example in the world of comprehensive regional planning—not flood control alone, not production of cheap power alone, but water transportation, control of erosion, fertilization of the soil, development of agriculture and industry, health protection, and education. It involved a complete vision of the ultimate welfare of some seven million people in a great series of river valleys; and it was accomplished, not by bureaucratic dictation, but by coöperative leadership working through locally constituted authorities. It is highly significant that, while our extreme reactionaries still oppose the extension of this magnificent procedure to other sections of the country, few have now the courage to attack the T. V. A. itself.

The ultimate possibilities of the application of the procedures of technological and social planning are almost limitless. It was no starry-eyed professor, but the hard-headed Donald M. Nelson who said: "For a generation we have been living on the edge of a new world; we are only beginning to realize it. For the first time in the history of the human race there can be enough of everything to go around. Poverty is not inevitable any more. The sum total of the world's greatest output of goods divided by the sum total of the world's inhabitants no longer means a little less than enough for everybody. It means more than enough."

To contemplate the lifting of the burden of want from the shoulders of the human race is, however, to take a long look into the future. Pending such an ultimate attainment, there is a second course which we may pursue in countries like the United States where the average income is more than sufficient to provide the essential health needs of our population. This second course is to equalize in some measure the enormous differences in individual family income which have been presented in the table and graph cited above. This end has been accomplished during recent years in certain countries by the radical process of socializing some or all of the major economic activities of the community through state management. Such a procedure involves perils of its own. In the United States it has no substantial support; and I believe we are wise in making every possible effort to meet the essential human needs involved while preserving the incalculable values of private initiative. Fortunately, techniques for this purpose have been developed in Western Europe, in Australia, in South America, and in the United States, which give substantial promise of success. They involve empirical procedures to meet particularly urgent problems, with a minimum disturbance of our traditional economy.

The first of these urgent problems is that of housing. The provision of a decent home, in which the citizens of the future can be reared under conditions free from direct menaces to physical and emotional health, may be considered as a fundamental and essential requirement of American life. According to the Dewhurst estimates we may look forward in 1950 to 17 per cent of our urban population, 35 per cent of our rural non-farm population, and 49 per cent of our farm population with family incomes below $1,000. At the most moderate estimate "a sixth of the nation" cannot, by any possibility pay for the cost of decent housing. Allowing one-fifth of income for rent—which is a maximum possible allowance—the $1,000 income family can pay only $200 for rent (on interest and upkeep) and this is far below the minimum figure which can possibly provide adequate shelter.

It was this inevitable conclusion which led to the passage of the National Housing Act of 1937. It provided for the construction of minimum cost housing for families of low income, under the decentralized direction of local housing authorities, with local tax exemption and with a federal grant to make up the difference between what each family can pay and what the housing costs. Some 160,000 low-income families benefited by the provisions of this act prior to the second World War. In my own city of New Haven, for example, 1,000 such families paid an average of $20–25 a month for rent of premises which actually cost $40–45, in the period prior to the second World War.

A bill to continue this essential type of service was introduced in the 79th Congress, with the backing of so eminent a conservative as Senator Robert A. Taft. It passed the Senate by a large majority and would have been readily approved by the lower House except that the House Committee on Banking and Currency failed to release it. Senator Taft has re-introduced his bill in the 80th Congress but the new bill has not as yet even passed the Senate. The housing problem becomes more and more acute every month. A study in Boston showed last spring that 56 per cent of the homeless veterans felt that they could afford only rentals under $50 a month and but 10 per cent that they could pay over $80 a month. Of the actual construction under way, only 8 per cent could rent for less than $50 a month and 78 per cent for over $80 a month.

The second outstanding problem for the family of low and moderate income is that of medical care. The average cost of such care is about $100 a year—a sum which cannot be provided on a $1,500 income; and the situation is, of course, aggravated by the fact that medical costs are so variable that they cannot be budgeted by any single family on any income except a very large one. The basic studies of the Committee on the Costs of Medical Care showed that in the income group below $2,000 (about half the population) one family in a hundred spent over $500, or one-quarter of its income in a given year, for medical care.

The result, of course, is that the family of low income—in spite of its larger proportion of illness— actually does not receive the medical care it needs. The classic data on this point are those obtained by the Committee on the Costs of Medical Care and are summarized in Table 5 for 1929. The last column of this table shows the service needed for satisfactory medical care, according to reasonable estimates made by a group of experts under the leadership of Dr. Roger I. Lee.

Only with a family income of over $10,000 were the Lee standards actually attained—or almost attained. The fam-

TABLE 5

Services received in families with specified incomes.

	Under $1,200	*$1,200–2,000*	*$2,000–3,000*	*$3,000–5,000*	*$5,000–10,000*	*Over $10,000*	*Services required by standards of good medical care*
Physicians' home, office, and clinic calls per person	1.9	2.0	2.3	2.7	3.6	4.7	5.6
Days of hospital care per person	0.9	0.7	0.8	0.6	0.8	1.2	1.4
Dental care, per person over 3 years of age	0.1	0.2	0.2	0.3	0.4	0.6	1.0
Cases receiving special nursing care per hospitalized case	0.1	0.1	0.2	0.3	0.4	0.7	0.6

ilies under $2,000 annual income received less than 43 per cent of the physicians' calls, less than 64 per cent of the days of hospital care, less than 34 per cent of the dental care, and less than 15 per cent of the special nursing care per hospital case—as compared with the $10,000 income group; and please remember that these deficiencies were recorded despite our vaunted free clinics and poor relief.

It is abundantly clear that, in spite of the unrivalled resources of the United States in hospitals, physicians, dentists, and nurses, the lower half of our population, from an economic standpoint, are not receiving the benefits which the marvelous advances of medical science place at our disposal. Nor is there the slightest possibility that programs of voluntary insurance, such as the Blue Cross and the Blue Shield plans, can meet the emergency. They are of great value in spreading the cost of medical care on an actuarial basis, for the upper and middle income groups. They cannot—by any stretch of imagination which remains in touch with the facts of life—be expected to meet the needs of the large group of families which cannot budget even the average cost of medical care.

Nor can a system of "doles" to the indigent be considered in any sense an adequate solution of the problem—even when extended by the use of the quaint term "medically indigent." This policy has often been described as an echo of the Elizabethan Poor Law of England; but the comparison is unfair to the period of Good Queen Bess. It is rather a repetition of the early Victorian Poor Laws which—in the flood of a *laissez faire* philosophy—were far more onerous than earlier legislation which involved a very real sense of feudal responsibility. Medical care is a privilege which should not be obtainable only at the cost of self respect.

This situation has been met in the Soviet Union by State Medicine—the provision of medical care to all citizens as a public function, as we provide education in the United States. The only alternative which has been found practicable in other countries is a system of Compulsory Sickness Insurance, under which employers and employees contribute to a fund for the payment of the costs of medical care. Such a plan is *not* "State Medicine." It does not deal with the practice of medicine at all or change the relation of physician and patient except in the one important respect that it makes it possible for the patient to receive care, not as a charity, but as a service for which he and his employer have accumulated funds to pay the bill.

Legislation for adopting a national policy of Sickness Insurance has been introduced in recent sessions of Congress; and has been strongly backed by President Truman. These measures have made no headway as yet, chiefly on account of the opposition of the American Medical Association, which has played in this connection a parallel role to that assumed by the National Association of Real Estate Boards in connection with housing. The statements prepared by the latter organization are identical in ideology and general phraseology with the fulminations of the National Committee of Physicians. It is a misguided opposition in both instances. Low-rent subsidized housing cannot possibly compete with any legitimate real estate business, since its beneficiaries can only be those families unable to pay an economic rent. As to Sickness Insurance, the "compulsion" which is denounced by certain medical writers is not exerted on the medical profession at all, but only on the employees and employers who must contribute to the fund. Employees are strongly in favor of such compulsion; and employers have voiced no opposition to it.

The third major problem of the low-income family is the haunting fear of the loss of even its low income through sickness, old age, or unemployment. This problem is approached by a program of Social Security which involves the accumulation of funds to meet such emergencies by contributions from the worker himself, or from the worker and his employer. In principle, we have adopted this policy in the United States, though on an inadequate scale.

The results of measures of this kind have been strikingly demonstrated by English statistics, and I speak of the experience of England under its traditionally conservative leadership of the past. (Even the new health program of the present Labour Government is modelled on exactly the lines proposed by Winston Churchill's coalition ministry.)

The Registrar-General of Great Britain used to publish every ten years a remarkably significant tabulation of statistics of mortality by occupations, with summaries for major economic and social groups. For 1921, when England was embarking on its program of housing, medical care and social insurance, and for 1931, after ten years of these programs, the following results were reported, in the form of comparative mortality figures for the ages 20 to 65. I have computed them on the basis of mortality rates of 100 for the most prosperous group.

Ratio of Mortality Rates for Five Major Economic Groups

	1921	*1931*
Upper and Middle	100	100
Intermediate	116	104
Skilled Workers	117	108
Intermediate	125	113
Unskilled Workers	156	123

In 1921, the unskilled worker had a death rate 56 per cent above that of the upper and middle class. In 1931, the differential against him had been cut down to 23 per cent.

I have no doubt of the ultimate result in the United States. When a certain line of action has logic and reason on its side, and when it has been followed by all other progressive and liberal countries, we shall adopt the policies indicated by reason and experience. We shall continue to improve our Social Security program. We shall resume our Housing Program. We shall accept the policy of Sickness Insurance.

At present, however, public discussion on these matters is not conducted on the plane of reason and experience, but on the plane of emotion and ideology. Even in an A.P.H.A. audience I strongly suspect that there are those who are now saying to themselves, "Why, this fellow is a Socialist! Or a Communist! He probably has a party member's card in his pocket!" I can recall the time when the motivation was the same but the label was different. In my youth, anyone who disagreed with an extreme conservative was an anarchist.

But we, in this audience, are after all scientists. Let us define our terms before we use them too recklessly. As a New Havener, and as a bit of an epidemiologist, I naturally turn to Noah Webster. The recent edition of his dictionary which I have at hand does not define Socialism, Communism, and Anarchism indiscriminately, as terms of opprobrium to be applied to anyone one does not like. It is a little more precise.

The first definition of Socialism is, "a political and economic theory of social organization based on collective or governmental ownership and democratic management of the essential means for the production and distribution of goods; also a policy or practice based on this theory. Socialism aims to replace competition by coöperation and profit seeking by social service, and to distribute income and social opportunity more equitably than they are now believed to be distributed." So far as I, myself, am concerned, this cap does

not fit. I rather like the aims outlined in the second sentence; but I am not convinced that coöperation and social service and more equitable distribution of income and social opportunity can only be attained by collective or governmental ownership of the essential means for the production and distribution of goods.

Webster's first definition of Communism is, "A system of social organization in which goods are held in common —the opposite of the system of private property." Not only land and capital and industry, but even private property of every kind is here involved. This idea does not appeal to me either; and its application to proposed policies for public housing, social security, and sickness insurance seems as remote as its application to our public school system of the present day.

Now, let us look up Anarchism. This is defined primarily as "The theory that all government is an evil."

This has a more familiar ring. I am not knowingly acquainted with any Communists, though my closest friends may, of course, be secret party members. But I do know a great many politicians and business men and editors who seem to think that government is an evil and should be reduced to its lowest common denominator. This seems to have a distinctly anarchistic trend. I refrain from calling my friends anarchists; but, in the United States today, the average conservative is much nearer to anarchism than is the average liberal to Communism.

Many years ago, the late Royal Meeker dealt with the problem on a practical plane, in a delightful passage. He said:

"Many earnest people are afraid that social insurance will take away from the working man his independence, initiative and self-reliance, which are so celebrated in song and story, and transform him into a mere spoon-fed mollycoddle. This would be a cruel calamity. But if the worst comes to the worst, I for my part, would rather see a race of sturdy, contented, healthful mollycoddles, carefully fed, medically examined, physically fit, nursed in illness and cared for in old age and at death as a matter of course, in recognition of services rendered or for injuries suffered in the performance of labor, than to see the most ferociously independent and self-reliant super-race of tubercular, rheumatic and malarial cripples, tottering unsocialistically along the socialized highways, reclining self-reliantly upon the communal benches of the public parks and staring belligerently at the communal trees, flowers and shrubbery, enjoying defiantly the social light of the great unsocialized sun, drinking individualistically the socialized water bubbling from the public fountain, in adversity, even eating privately the communistic bread provided in the community almshouses, and, at last going expensively to rest, independently and selfreliantly in a socialized or mutualized graveyard, full of little individualistic slabs erected to the memory of the independent and self-reliant dead."

To return—in more serious vein—to the subject of Communism. Communism in the world today means two distinct things. It connotes a social ideal; and it also connotes a practical system of government. The latter in my judgment is far more dangerous than the former. It is a system of government based on certain defined and specific principles which must be accepted in every detail by the devout believer and enforced by an all-powerful and ruthless bureaucracy. It is not merely a system of government but a religion, with the Communist party as its priesthood. We meet here today as scientists; and the very essence, the life-blood, of science is the assumption that the full truth about this world in which we live has never been told—and never will be told. Truth evolves from experience. It is ever growing; and always incomplete. Our older religions have learned this lesson. They stand for certain basic spiritual and moral aims; but they recognize that application of these principles changes with broadening human knowledge. The Communist religion is young and brash. It has the answer to

every question of detail, and that answer is officially promulgated by a small and all-powerful hierarchy. If evolution has any lesson to teach us it is that rigidity is the one biological error which Nature does not forgive. Any fixed and immutable form of society or any form of society which progresses, and must progress along certain predetermined lines, will go the way of the giant Saurians which preceded man in the domination of this earth.

Democracy is not only pleasant. It is also the road to survival because from its essence it is free and empirical. It, alone, can be the inspiration of an evolving social order.

It must, however, have its religion too, its broad philosophy with regard to the ultimate ends to be attained; and one of these basic ends is the good life for all. We seek this end not from sentimentality or any meddling itch for "do-gooding." We seek it because needless human suffering is inherently distasteful. None of us in this room likes slums. None of us likes the knowledge that our fellow citizens are sickening and dying without essential and available medical care. None of us likes the consciousness that the sick and the aged and the unemployed go in want in a land of plenty. Such conditions violate an inherent sense of the fitness of the environment in which we live. This is a positive, not a negative impulse. As Richard Cabot once said, in connection with the support of social case work, "We give not as people who find the world pitiable, so miserable that we want to diminish its misery. We give as people who find the world so glorious, so overflowing in what it has done to us, that we want to even up, to pay out. The want to share our enthusiasm." (Do not forget that word "enthusiasm." It means in its original Greek derivative sense, "an inward God.")

Finally, I would like to point out one very practical reason for proceeding along the road of social evolution as rapidly as possible, at the present moment. I have no doubt as to the ultimate triumph of a flexible scientific democracy over a rigid ideological communism. But we cannot ignore the fact that a deep conflict between these two forms of society divides the world today. We hope that it will not reach the stage of arbitrament by atomic bombs; but it is a conflict, nonetheless. Its issue will depend on the practical success of two rival systems in fostering the strength and the happiness and loyalty of their respective peoples; and a society cannot be really strong, truly happy, basically loyal, unless its advantages are shared in substantial degree by its poorer as well as its richer members.

Our problem is to build up the health and the happiness and the devotion of our whole people—not primarily to our country as a geographical or racial unit but to the ideals of human equality of opportunity for which that country stands; and to do it empirically and rationally, rather than by ideological goals such as communism on the one hand or anarchism on the other.

The spirit of totalitarianism is far more dangerous than its purely economic implications. As I have said elsewhere, if we adopt the methods of totalitarian ideology we are surrendering to the very worst element which is common to both Communism and Fascism. That is what is happening when we demand absolute conformity with the social program of one group which happens for the moment to be in power; stifle discussion, call everyone who differs a Communist and everyone who has ever been associated with any organization in which there was ever a Communist member, a fellow-traveler. Such an attitude abandons reason for ideology, and philosophy for a perverted semantics. It overwhelms empirical evidence in a flood of catchwords. It enthrones emotion above reason, by discovering

Un-American art and Un-American Music and Un-American Science.

The writer has behind him ten generations of New England stock. He learned that the American tradition meant freedom of thought and of speech (up to the limit of legally prosecutable action); that it meant open-mindedness and readiness to try experiments; that it meant initiative in the working out of the problems of society; that it meant experimentation and progress.

The other road—that of rigid conformity with the theory of a temporarily powerful group—of defining not only what a man must do but what he must think and feel—and with whom he may be acquainted—is the road to what is truly "Un-American." This was the technique of the Hitler regime in Germany and is the technique of the Communist leaders in Russia. Pray God, it may never become the prevailing mood of America.

Our approach today should be that expressed by the first settlers of Guilford, Conn., who on June 1, 1639, faithfully promised "each for ourselves and our families and those that belong to us that we will, the Lord assisting us, sit down and join ourselves together in our entire plantation and be helpful each to the other in any common work, according to every man's ability and as need shall require."

Since the days of John Simon, the public health movement has had a history of approximately one century. I have fought in the ranks of the health army for nearly half of those hundred years.

You and I have determined that men should not sicken and die from polluted water, from malaria-breeding swamps, from epidemics of diphtheria, from tuberculosis. Those battles have been, in large measure, won. We must now determine that men shall not be physically and emotionally crippled by malnutrition, by slum dwelling, by lack of medical care, by social insecurity. If there are better ways than public housing, and sickness insurance, and social security, let us find them. If not, let us move forward on the lines which I have tried to outline above.

And so, I urge those who do not agree with me to mend their ways; and those who do agree with me to go forward with hope and courage.

Public Health and the Future

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SEVENTY-FIVE years ago, when the American Public Health Association was founded, General Grant was President of the United States, and yellow fever was a constant threat in the Gulf States and along the Atlantic seaboard. Cholera was epidemic in more than 200 cities and towns in the Mississippi Valley. State boards of health had been set up in only four states of the Union, and the broad functions of the U. S. Public Health Service were far ahead on the horizon. Local boards of health were beginning to be created in a handful of cities, but they were for the most part dominated by politics; and when the Mayor of New York was asked by a medical delegation, alarmed by an approaching cholera epidemic, to summon the Board of Aldermen which was also the Board of Health, he replied: "I will not call the Board, for I consider it more dangerous to the city than cholera."

Seventy-five years ago the science of bacteriology was just beginning, with most of Pasteur's work still to come, and with Koch and Klebs and Loeffler and Gaffky still in the future. General Grant's generation was handicapped by its lack of the scientific knowledge which subsequent decades developed. The world had to wait a quarter of a century to discover the simple fact that yellow fever is carried by mosquitoes, and more than another quarter of a century had to elapse before a vaccine for this disease was found.

I mention the conditions that existed when this Association was born because in attempting to see what the future will bring in the field of public health —and it is something of a presumptuous attempt—we have to start with the realization that the future is going to be radically different from the present. There is no such thing as maintaining the *status quo* in any aspect of human life. The advance of knowledge, the growth of social ideas, the widening field of democracy with its emphasis on the rights of men—all men, everywhere —factors like these make change inevitable, and while our guess as to the future may be wrong in its details, of this we can be confident: that our grandchildren and our great-grandchildren, seventy-five years from now, will look back on our era with the same sense of unreality and, let us hope, tolerant understanding, with which we look back on the days of General Grant. If to us General Grant's era is a kind of museum piece, so will our era appear to our children.

This conclusion is frankly a blow to contemporary self-esteem. Each generation likes to think that it has at last arrived at something that looks like permanence and stability in the realm of ideas and practice—that after long generations of search, truth has at last been discovered, at least as far as its main contours are concerned. "The past is a vast sea of errors," said Becarria, thereby implying that they had all been corrected in his time. But truth cannot once and for all be captured by a syllogism or pinned down by a microscope. On no subject has the last word been said. In regard to no belief is there an element of finality. Through-

out the entire range of human knowledge and experience everything is and must remain in a state of perpetual flux. In the words of Mr. Justice Holmes: "Certainty is illusion and repose is not the destiny of man."

As a matter of fact, even if we had the power to stop the motion-picture machine of human life and keep the lens focused on a single image, we would not want to do it. It would mean, for example, the death of public health activities. For public health depends upon the growth of scientific knowledge, and when that growth is retarded, as it has been in Germany for the last decade or so, the results are stagnation and decay. The law of life is growth, and in no aspect of human existence is that law more important than in the field of knowledge. We public health people—if for a moment I may include myself as a member of this distinguished company—accepted as the final word Walter Reed's classical discovery of the Stegomyia mosquito as the carrier of yellow fever. We gave the mosquito another name, but we assumed that for all practical purposes the truth—the whole truth—had been found and neatly packaged by Walter Reed. Twenty-five years later, with the discovery of new evidence, the whole epidemiology of yellow fever had to be rewritten.

This uncertainty, this realization that truth is always ahead of us and can never be finally captured—this is what gives vitality and glory to the intellectual life. And it lends hope to the future, too, and makes it possible to talk about that future with some degree of realism. We are on the verge of a great era in the field of medicine and public health. The sulfonamides, penicillin, radio-active isotopes, DDT—to mention only a few new instruments which have been placed in our hands—foreshadow a new move forward, a new renaissance, a new period in human development when the imagination is endowed with wings; and if only we can be freed from the blight of war, it does not seem impossible to believe that within a period of no unreasonable duration we shall be able to limit the ravages of diseases like cancer, tuberculosis, infantile paralysis, and perhaps some of the degenerative disorders, and even the common cold.

Prophecy is always dangerous and often foolish, but it seems to me that we are justified at this moment in trying to explore, as best we can, some of the changing frontiers of public health. May I mention briefly two or three points where it seems to me the changes are coming, or at least where changes are due?

In the first place, there are strong evidences that the border lines between curative and preventive medicine are fading out. Public health has been concerned primarily with its traditional preventive work, on the general theory that "a fence at the top of the cliff is better than a hospital at the bottom." But diagnostic and curative medicine cannot avoid preventive measures any more than preventive medicine, under certain circumstances, can stay out of the curative field. We have the phenomena now of public health people running hospitals (for the very good reason that if we didn't run them, nobody else would) and of practitioners, in fields like obstetrics and pediatrics, moving openly and boldly over to the preventive side. It works both ways, and substantial experience as well as practical demonstrations are accumulating, particularly in the English-speaking and Scandinavian countries, which show how the old lines are breaking down. Certainly the attempt to fix the boundaries of public health by establishing a rigid distinction between prevention and cure is no longer realistic. Medicine and public health alike are reaching the stature of a social science in

the service of society, and as an integral part of the social process.

Now where this trend is going to lead ultimately is anybody's guess, but one aspect of the problem is intimately related to the economics and sociology of medical care. The tide is surely running in the direction of a far wider distribution of the benefits of modern medicine than has hitherto, at least in the United States, been thought practicable. Medical care—and by medical care I mean its preventive, diagnostic, and curative services—in the future is going to be determined not by the financial status but by the actual requirements of the individual. Our democracy will not continue to allow its citizens to die, or for that matter to be only half alive, solely because they are unable to pay for what modern medicine would give them. Health, like education, is not only an individual asset; it is a national asset as well. The idea of free education to serve all the people is now so completely accepted everywhere that we overlook the fact that two or three generations ago it was a revolutionary concept. My own grandfather, a schoolmaster, was among those who led the fight for free public schools on the Niagara frontier in Western New York; and my father, also a schoolmaster, was in the fight for free textbooks.

So today, in the field of medical care, we are coming—some of us reluctantly—to the conclusion that a way must be found by which the burden of illness can be equitably spread. The trend is irresistibly in this direction and it cannot be stopped by the attacks of frightened orthodoxy or by false and silly charges of adherence to an alien and repugnant philosophy. Our democracy is not static; it is a vigorous and growing faith. The American tradition has always been a tradition of experimentation. The sturdy stuff that makes this nation great is its capacity for adaptation, its willingness to meet new conditions with new methods, whether in the realm of machine tools or social arrangements. We have kept ourselves strong and healthy because we have known, instinctively at least, that the termites of history are waiting for ideas and practices which have lost their power to grow.

In the second place, in our attempt to guess the future, it seems to me that public health is bound to move, far more actively than it has up to the present time, into the field of mental hygiene. It is estimated that eight million persons, about 6 per cent of the population of the United States, are suffering from some form of mental disease or personality disorder. Indeed, there is a real sense in which the growing awareness of psychiatric difficulties threatens to overwhelm the medical profession in the nation. It is authoritatively stated that we need, at a minimum, twice the number of qualified psychiatrists now available and six thousand additional psychiatric social workers.

It is foolish to blind our eyes to the vast difficulties which must be overcome in developing an effective mental hygiene program. Our knowledge of the whole field is narrowly limited, and continued and intensive research over many years will be necessary to give us the tools for discovering who are the potential misfits or psychopaths, and what types of preventive work are best adapted to these subclinical cases.

But the emergency is an urgent one, and a defeatist attitude is as unthinkable in relation to this situation as it would have been seventy-five years ago in relation to cholera and yellow fever. Already there exists considerable knowledge of the psychology of children and methods of avoiding the development of fears and phobias. One obvious means of approach is through the educational system, working not only with children but with their parents. Pediatricians

and public health nurses also have a part to play in planning the long-range attack, and there is immediate need for more effective coördination between mental institutions and public health agencies.

There will be no quick results from any program. Years of work and experimentation in this field lie ahead of us. The point I am stressing is that mental hygiene is an inseparable part of public health, and that seventy-five years from now our reluctance to recognize this fact and the backwardness of our knowledge in this area will seem as quaint and strange to our grandchildren as if we belonged in the days of General Grant.

In the third place, in our effort to foresee the contours of the future, I believe that public health is bound to think increasingly in global terms. Whether or not he likes the idea, the health of a man's neighbors now concerns everyone on this planet. With airplanes crisscrossing the world from every direction in a few hours' time, it could not be otherwise. It is interesting to note that public health activities in the United States began in the municipalities. The state public health agencies represented a subsequent development, as the realization grew that a city or town by itself was unprotected against the disease of its more careless neighbors. It was much later that the area of public health was widened to the whole United States and we had the U. S. Public Health Service. That is the way life develops; human progress is always from smaller loyalties to larger loyalties.

But in our time we are confronted by the fact that programs of health even on a national basis are not enough. Lincoln said that this country could not remain half slave and half free. So today we have to admit that the world cannot be half healthy and half diseased. We cannot have cholera and bubonic plague and epidemic meningitis and typhus fever rampant in large areas of our planet and expect the rest of the planet to be increasingly free of disease.

It was this conception that made the work of the Health Section of the League of Nations the greatest single achievement of that organization. And it is this same conception that today makes the founding of the new World Health Organization, under the United Nations, one of the significant and promising events of our time.

I believe that this development of public health activities on an international scale is only at its beginning. We are on the threshold of a new era, a new kind of political and social thinking. In the constitution of the World Health Organization health is defined not as being merely the absence of disease and infirmity, but as "a state of complete physical, mental and social well-being." This is indeed a turning point, a dramatic declaration of the meaning and place of health in the life of men; and the future will demonstrate, I believe, the validity of that other prophetic sentence written into this same constitution: "The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being, without distinction of race, religion, political belief, or economic or social condition."

These admirable principles, these high hopes, are, of course, subject to the condition that our civilization holds together. What a tragedy that after the chaos and savagery to which this generation has been exposed, that ominous question should still be the qualification which governs all our thinking about the future! Seventy-five years ago the question was not even thought of, let alone asked. The philosophy of Herbert Spencer and the belief in the inevitability of human progress was an integral part of the faith of our fathers. Perhaps

there were some advantages, after all, in belonging to the generation of General Grant. Today, under the impact of two cataclysmic wars, that old faith is faltering, and we are desperately anxious about the future, and men everywhere around the world are haunted by fear.

In this critical situation it seems to me that public health and medicine have a tremendous part to play. They perhaps possess one of the keys that will unlock the door to a brighter future. For health is something that all men desire and there is no limited supply for which nations must compete. Public health work carries no threat to anybody, anywhere. Cancer and scarlet fever have no political ideology. There is no Marxian method of eliminating gambiae mosquitoes as distinguished from a western democratic method. The laws of sanitary engineering do not bear a Russian or an American label. No difference exists between tuberculosis in the Soviet Union and tuberculosis in the United States. Infantile paralysis is the same thing in Moscow and in Washington, and human sorrow is no less poignant in one city than in the other. The world of disease and misery is not divided; it is a common world. In terms of human suffering the world is truly and tragically one world.

More effectively than any other approach, medicine and public health can build a conception of common human need, of the single destiny that awaits life on this planet, whether it be good or evil. We are members of one human family, fighting the same enemies of disease and suffering. Only by united effort can we survive, and the field of public health can be a practical demonstration of a new kind of teamwork. It can be a bridge across the gulf that separates this frightened present from a saner and better balanced future. Symbolically and literally it can bring its healing techniques to a human society that is desperately sick.

I am, of course, speaking of long-term hopes for humanity. The development of world understanding, of a synthesis of thought in which divergent points of view will fertilize each other for the common good—this will not be accomplished today or tomorrow. We shall not build the edifice of our international society all at once. It will be done slowly, painfully, brick by brick. My belief is that many of the bricks, particularly at the bottom tiers where they are most important, will be supplied by the common aspiration of all men everywhere for better health and a better life, and by their willingness to join forces to secure it.